JVC Service Manual

3-CCD COLOR VIDEO CAMERA
3-CCD-FARBVIDEO KAMERA
CAMERA VIDEO COULEUR A TROIS CCD

MODEL
MODELL
MODÈLE **KY-17FIT**
(with KA-20)

VICTOR COMPANY OF JAPAN, LIMITED

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: **Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.**

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

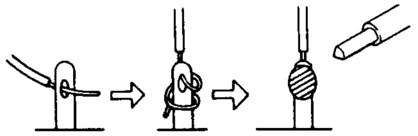


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

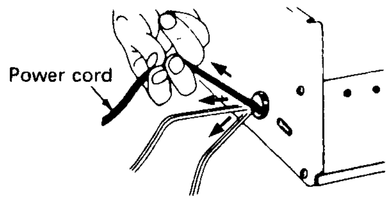


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

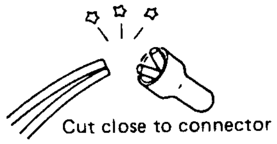


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

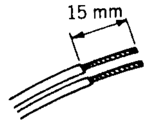


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

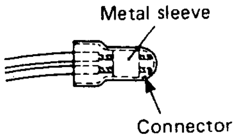


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

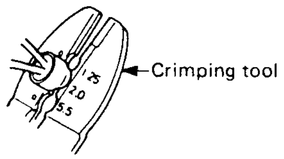


Fig. 6

(5) Check the four points noted in Fig. 7.

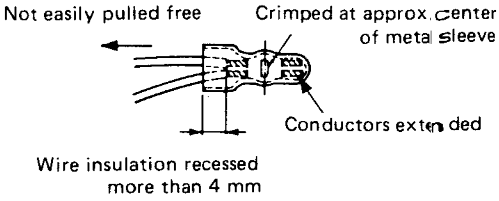

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

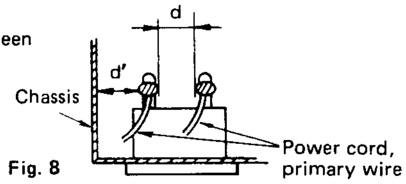


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

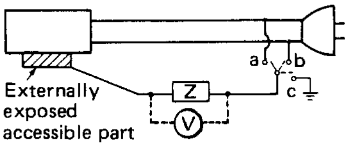


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

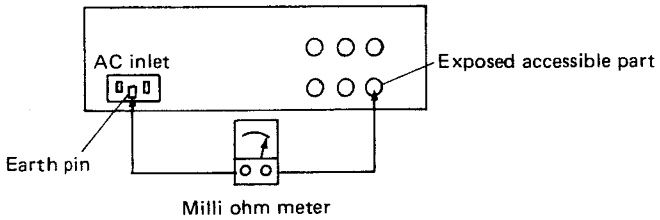


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

JVC Instructions

3-CCD COLOR VIDEO CAMERA
KY-17FIT

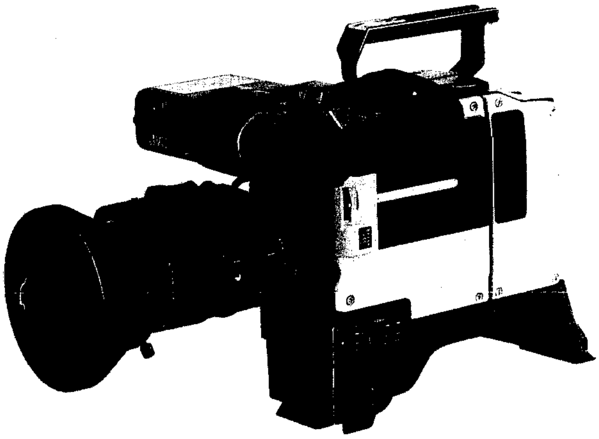


Photo shows the KY-17FIT Video Camera combined with Viewfinder (VF-P10), Zoom Lens (HZ-713) and Camera Adapter (KA-20).

For Customer Use:
Enter below the Serial No. which is located on the top frame. Retain this information for future reference.

Model No. KY-17FIT

Serial No. __________

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Due to design modifications, data given in this instruction book are subject to possible change without prior notice.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

AVERTISSEMENT:
POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, NE PAS EXPOSER L'APPAREIL A L'HUMIDITE OU A LA PLUIE.

POWER SYSTEM

This color video camera should be used with 12 V DC only.

CAUTION:

To prevent electric shocks and fire hazards, do NOT use other than specified power source.

Système d'alimentation

Cette caméra vidéo couleur ne doit étre utilisée que sur tension continue de 12 V.

Attention:

Pour éviter tout risque d'incendie ou d'électrocution, n'utilisez aucune autre source d'alimentation.

Information for Canada

This product complies with D.O.C limits (C.R.C., C.1374) partaining to class B digital apparatus.

Renseignement pour Canada

Ce produit est conforme aux normes du M.D.C. (C.R.C., ch.1374) s'appliquant aux appareils numériques de classe B.

Changes or modifications not approved by JVC could void the user's authority to operate the equipment.

Thank you for purchasing the JVC KY-17FIT Color Video Camera. This video camera is a compact, sturdy unit designed for portability; making it suitable for a wide range of studio and field applications, including camcorder and separate VCR use. To utilize this product to its fullest, please read this entire booklet for the best understanding of its capabilities and operation.

FEATURES

- **Excellent picture reproduction with 3 interline transfer CCD chips**
  - Compact design, lighter weight and less power consumption than conventional tube cameras.
  - Low lag and a high resistance to image burn-in with no deflection distortion.
  - High sensitivity and S/N attribute to the excellent performance in low light situations.
  - Excellent resistance to vibration and impact.
  - Virtually no misregistration from terrestrial magnetism.
  - 540 TV lines of horizontal resolution is attributed to a high-precision F1.4 prism, coupled with*360,000 pixel CCD's for each of the Red, Green and Blue channels. Due to the use of half-pitch spatial offset, a Y-channel horizontal resolution of 700 TV lines can be obtained.
  - The FIT CCD employed in the KY-17FIT brings quality picture of little smear.
  - RGB use is possible with the optional RM-P200/RM-P300 remote control unit for computer graphics and other RGB applications.
- **Compact, Composite and Y/C Outputs**
  With these three outputs the KY-17FIT can meet a variety of configurations with different VTR cables; Y, R-Y, B-Y for MII, Y/C for S-VHS or Composite for standard use.
- **Built-in Electronic Shutter**
  By employing the use of a variable electronic shutter, blurred images are a thing of the past. Shutter speeds of **1/100th, 1/250th, 1/500th, 1/1000th and 1/2000th are now possible in addition to the standard. This allows for clear visibility of fast moving objects during slow-motion analysis.
- **Character display of operation**
  On the screen of the viewfinder, VF-P10, camera operating conditions are indicated by logical character displays.
- **Microcomputer-controlled automatic set-ups**
  Auto White, Black and Iris functions are controlled by a microcomputer for exact balancing and level adjustments. This one-touch process results in quality pictures with optimum levels under any conditions.
- **Comprehensive functions**
  - Standard 2H contour correction is provided.
  - 3 settings for white balancing.
    Two memory positions are available and a 3200K preset for emergencies, whether you are indoors or out. (Depends on filter wheel settings)
  - Negative and positive signal output is possible for film transfer applications.
    Color-Matrixing for exact camera matching.
- **Meeting studio camera requirements**
  Using the optional remote control unit RM-P200/RM-P300, extension up to 100 m/325 ft (300 m/975 ft by use of RM-P300) is possible. From the RM-P200/RM-P300, the composite and RGB signals (Y/C signals or Y/R-Y/B-Y [for MII] signals can be selected using an internal select switch) can be obtained. (The KA-20 camera adapter is required.)

  Caution:
  When the remote control unit RM-P300 (optional) is used together with, some of its functions not empolyed in the KY-17FIT are not activated.
- **Camcorder configuration**
  This color video camera is designed to be configured with the JVC BR-S411 S-VHS video cassette recorder, forming a Camcorder configuration.

* 420.000 pixel for E version.
** 1/120 for E version.

PRECAUTIONS

Safety Precautions

- Use only the optional DC-C11/NB-G1 (with BH-P20) Battery Pack or the optional AA-P200/AA-P250 AC Power Adapter. Adapter. (AA-P200 is available for U version only.)
- Do not modify the unit or operate it without cover panel to prevent danger.
- When there is any abnormality (abnormal noise, smell, smoke, etc.) with the unit, immediately turn the power off and contact your nearest JVC-authorized service agent.
- Do not damage or fray the power cord. Otherwise, this will cause leakage or electrical shock.
- If the camera is not going to be used for an extended period of time, leave the power cord disconnected for reasons of safety.
- If there is a danger of being struck by lightning during outdoor shooting, evacuate to a safe place immediately.

Handling Precautions

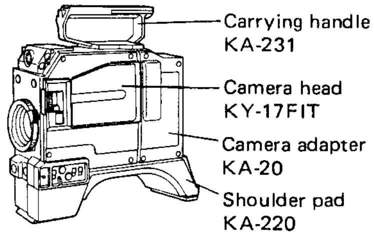
- **Supply voltage**
  Make sure that the power is between 10.5 V and 15 V DC. If the power voltage is too low, abnormal color and increased noise could occur. Do not exceed 15 V DC in any case, or the unit could be damaged.
- **Connecting to a portable VTR**
  Different VTRs require different start/stop triggering modes and connection cables. Before connection, carefully read "Connection to Video Recorder" on page 12.
- **Ambient temperature**
  Do not operate the camera outside a -5°C to +45°C (23°F to 113°F) temperature range. Refer to the corresponding item in the "Specifications" on page 26.
- Where there are strong electromagnetic waves or magnetism, for example near a radio or TV transmitter, transformer, motor, etc., the picture may contain noise and the colors may be incorrect.
- When a wireless microphone or wireless microphone tuner is used near the camera, the tuner could pick up noise. In such a case, select another channel.

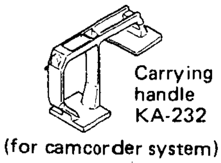
STANDARD CONFIGURATION

This camera is provided just as the camera head (KY-17FIT) but it can be systematized appropriately for a variety of applications with the options listed below.

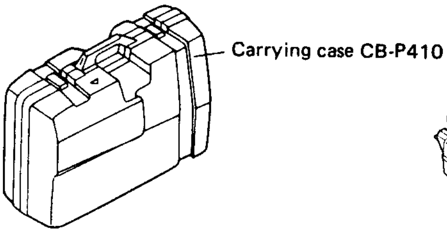
- Configuration

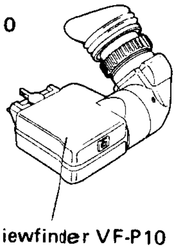
Camera head	KY-17FIT
Shoulder pad (KA-220)	Provided with
Tripod base (KA-500X)	Provided with
Carrying handle (KA-231)	Provided with
Carrying handle (KA-232)	Provided with (for Camcorder system)
Chest rest (KA-111)	Provided with
Camera adapter (KA-20)	Not provided with
Viewfinder (VF-P10)	Not provided with
Carrying case (CB-P410)	Not provided with

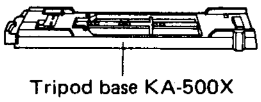




Chest rest KA-111







CONTENTS

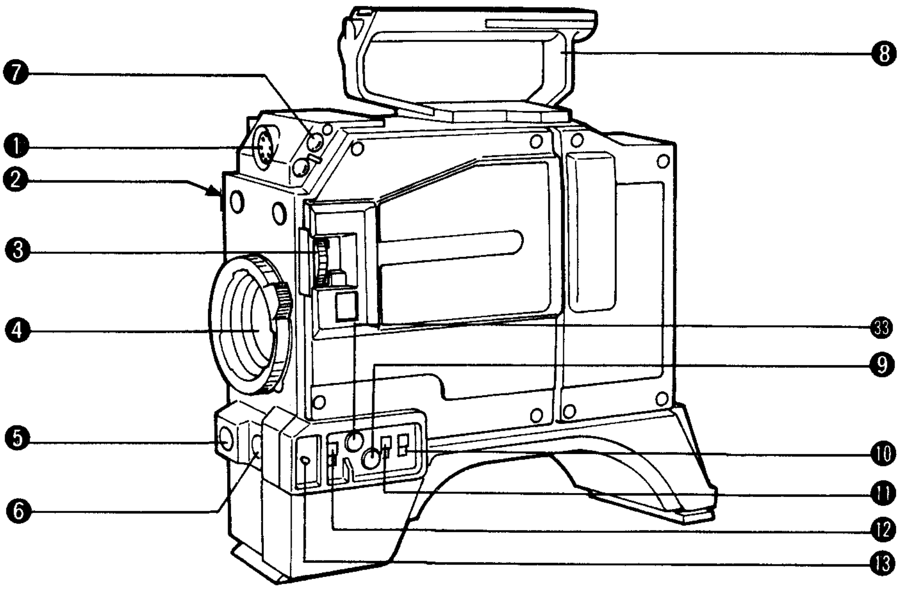
Page
Features 1
Precautions 2
Standard Configuration 2
Controls, Connectors and Indicators 3
Installation 7
Power Sources 11
Connection to Video Recorder 12
Before Shooting 13
Operation 15
Warning Indication and Character Display 17
Genlock Operation 19

Page
Camcorder Configuration with VTR 20
  Before installation 20
  Installation 21
  Power supply 21
  Basic recording procedure (with BR-S411, NB-G1) . . . 22
  Power saving operations 23
  Ending recording 23
  Monitoring the playback picture 23
  Audio operation and level control 23
  Warning indication and character display 24
Troubleshooting 25
Specifications 26

CONTROLS, CONNECTORS AND INDICATORS

* 1/120 for E version.
** 1/50 for E version.

Camera Head



① Viewfinder connector (VF)
Connector for a exclusive viewfinder (VF-P10).

② Lens connector (LENS)
Connect the cable from the standard lens.

③ Filter turret
The turret for the Neutral Density and color temperature conversion filters is provided with four positions.

1) CLOSE: Same condition as lens being capped.
2) 3200K: For shooting indoors or outdoors with insufficient light.
3) 5600K: For shooting outdoors.
4) 5600K ND: The 25 % ND filter and 5600K color filter are combined for shooting outdoors on a fine day.

④ Lens mount ring

⑤ Auto setup button (AUTO SETUP)
Press this button to adjust the setup (black/white balance) or the white balance automatically and save the state in memory. When the button is pressed once, the white balance is adjusted; when depressed continuously for longer than one second, the setup is adjusted.
Before pressing this button, set white balance mode switch ⑩ to the AUTO 1 or AUTO 2 (whichever you want to save) position.

⑥ Video recorder start switch (VTR)
For start/stop triggering of the VTR.

⑦ Shutter speed select button and indicator lamp (SHUTTER)
This button permits speed selection of the electronic shutter. This is effective when shooting fast-moving subjects.

SHUTTER
- SELECT
  Every time this button is pressed, the shutter speed will change to *1/100, 1/250, 1/500, 1/1000 and 1/2000 in this order (cyclic operation). At this time, the indicator lamp comes on.
- NORMAL
  If this button is pressed, the shutter speed will become**1/60. Normally use in this state. The indicator lamp goes out.

⑧ Carrying handle (KA-231)

⑨ Display select button (DISP SELECT)
This camera has a function to display the setting conditions of various control switches and settings in the viewfinder screen. There are two display screens; every time this button is pressed, the display will change from "no indication" to "screen 1" to "screen 2" sequentially.

⑩ White balance mode switch (W BAL)
This switch permits mode selection of white balance.

AUTO 1 and AUTO 2: Set to either position when activating the auto setup or auto white balance function. This camera has two auto white memory circuits and this switch serves as its select switch.
PRESET: For using in the preset (3200K) state or 5600K with change of filter wheel.

⑪ Camera/color bar select switch (MODE)

CAM: Outputs the video signal from the camera to the video output.
BARS: Outputs the color bar signal to the video output.
NEGA: Outputs the negative video signal from the camera to the video output.

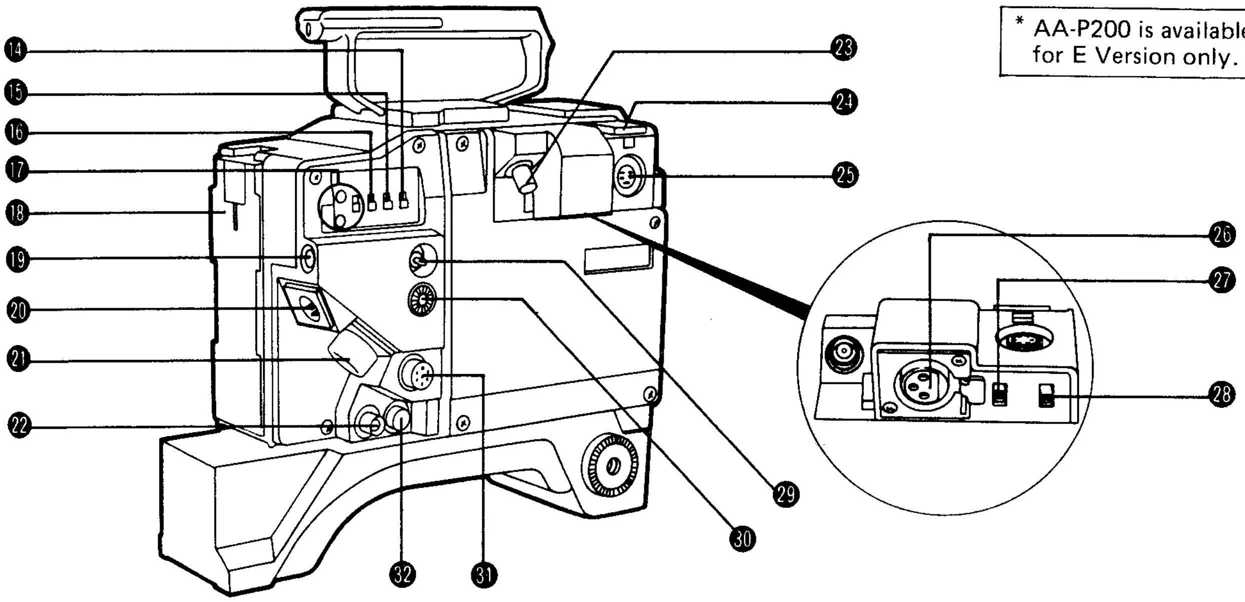
⑫ Sensitivity select switch (HI-SENS)
For use in low light conditions, the camera sensitivity gain can be boosted by +9 dB or +18 dB. Normal operation is "0 dB".

⑬ Operation switch (CAMERA/VTR)
3-step select switch. Selects "ON", "OFF" of the camera power and VTR power-save mode*.
* This may not be possible with some VTRs.

⑭ Camera cable select switch (MODE)
Select according to the application of camera cable connector ㉑

VTR: Set to this position when connecting to a portable VTR with a composite signal input or component signal input (Y, R-Y, B-Y).
Y/C 358: (Y/C 443) Set to this position when connecting to a VTR with separate Y/C signal inputs (S-VHS recorder).
RM Set to this position when connecting an optional remote control unit (RM-P200/RM-P300).

⑮ VTR triggering mode select switch (VTR)
Set according to the start/stop triggering mode of the VTR connected.



* AA-P200 is available for E Version only.

Switch position	VTR connector	VTR trigger	VTR connected
L	10-pin	Ground start	VHS*
H	10-pin	4 V start	
B	14-pin	4 V start	S-VHS, U-standard, MII, Betacam

* Some of VTRs start with the switch set to "H" position (H or L depends on the manufacturer). Confirm this beforehand.

⑯ Mic output level select switch (AUDIO LEVEL)
Selects the microphone (audio) output level through camera cable connector ㉑
H: Outputs at an approximate level of −20 dB.
L: Outputs at microphone's own level.

⑰ Phase adjustment control (PHASE)
Adjusts the phase of the video signal output from the camera with respect to the external reference signal when genlocking to other video sources.
H: For adjustment of H phase.
SC: Coarse; For coarse adjustment of SC phase in three steps, 0°−120°−240°.
Fine: For fine, continuous adjustment of SC phase.

⑱ Battery Guide
Guide for battery pack (DC-C11, optional). This is also used as a holder when the AC power adapter*AA-P200 (optional) or battery holder BH-P20 (optional, for the exclusive battery NB-G1) is used.

⑲ Earphone jack (EARPHONE)
When the video recorder used has a return audio signal line, this jack makes it possible to monitor the audio signal during recording or playback.

⑳ DC 12 V IN connector (DC INPUT)
Use this 4-pin Cannon XLR connector for supplying 12 V DC from the optional AA-P250 or *AA-P200 AC power adapter.

Pin No.	Function
1	GND
2	
3	
4	+12 V

㉑ Camera cable connector (VTR/RM)
Connector for connecting the cable from the recorder, etc. selected by switch ⑭ .

㉒ GENLOCK signal input connector (GENLOCK IN)
Input connector for a composite video or black burst external reference signal. This allows synchronization with other video devices.

㉓ Test output connector (TEST OUTPUT)
The signal selected by the internal "PIX SELECT" switch is output here. Either composite video signal (VBS), or B, G, R signals can be selected as an output. This is factory-preset to the composite video signal (VBS) output.

㉔ Exclusive microphone mounting shoe
Shoe for mounting the exclusive microphone M-K50 (monaural type) or MV-P602 (stereo type).

㉕ Exclusive microphone input socket (MIC)
Input socket for the exclusive microphone M-K50.

㉖ Mic input socket. (MIC INPUT)
Input socket for the microphone with a 3-pin XLR connector. The input is parallel with MIC connector ㉕ .

㉗ Mic output select switch
This switch must be set to "MONO" position.

㉘ VF AUX video select switch
When the VTR is set to the playback mode with the 14-pin type VTR connected to camera cable connector ㉑ , if this switch is set to ON, the playback picture can be monitored in the viewfinder. This serves the same function as the RET switch on the lens.

㉙ Power select switch (POWER)
Permits power on/off and selection of power supplies.

RM/VTR:	Set to this position when power is fed from the remote control unit (RM-P200/RM-P300, optional) or portable VTR through the camera cable.
OFF:	The power to the camera will be completely set to OFF.
DC INPUT/ BATTERY	: Set to this position when the AC power adapter (*AA-P200 or AA-P250, optional)/4-pin XLR or the battery pack (DC-C11 or NB-G1, optional) is used.

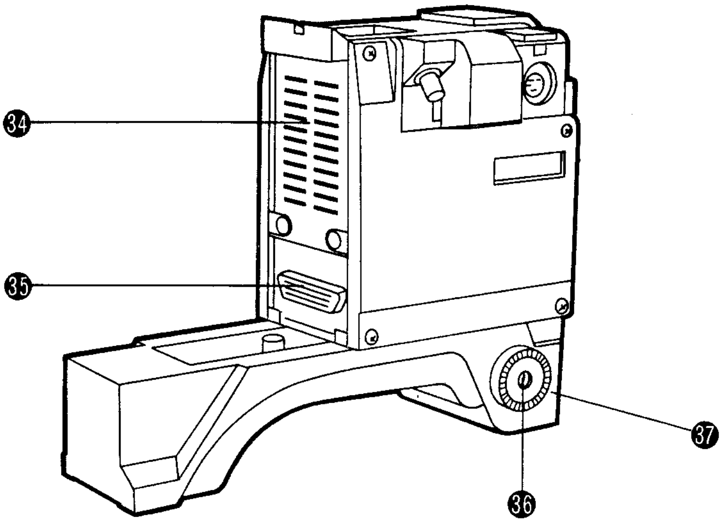
㉚ Intercom level (INTERCOM LEVEL)
Can control the volume level of the camera's intercom headphone.

㉛ Y/C358 (U version), Y/C443 (E version)
Y/C signals are output when camera cable select switch ⑭ is set to "Y/C358(443)". A unit with a 7-pin connector input (S-VHS VTR, etc) can be connected here.

㉜ Intercom jack (INTERCOM)

㉝ Zebra button (ZEBRA)
Switches the zebra pattern video level indicator on the viewfinder ON/OFF.

Rear of Camera Head



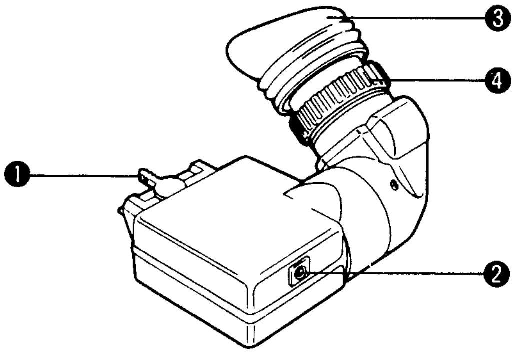
㉞ **VTR mount**
This camera is S-VHS VTR compatible. At present the VTR to be used is the JVC BR-S411 which is sold separately.

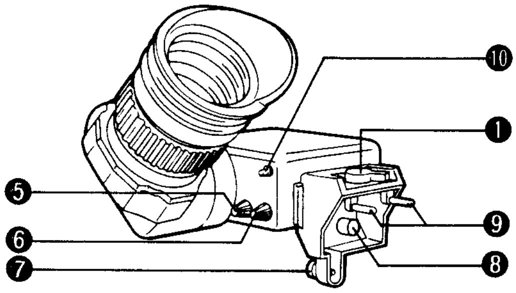
㉟ **VTR connector (50 pins)**
Connect the 50-pin connector of the BR-S411 S-VHS VTR.

㊱ **Chest rest fit**
To fit the chest rest KA-111

㊲ **Shoulder pad KA-220**

Viewfinder (VF-P10, optional)





❶ **Slide lock lever**
After the viewfinder has been attached to the camera, the viewfinder can be slid to the left and right (by 40 mm) if this lever is loosened.

❷ **Tally lamp**
This LED comes on to indicate the recording mode. To switch it off, set switch ❿ to OFF.

❸ **Eyepiece**
Focusing adjustment is possible.

❹ **Eyepiece fixing ring**
Loosen and adjust the eyepiece back and forth to match you vision.

❺ **Contrast control (CONT)**

❻ **Brightness control (BRIGHT)**

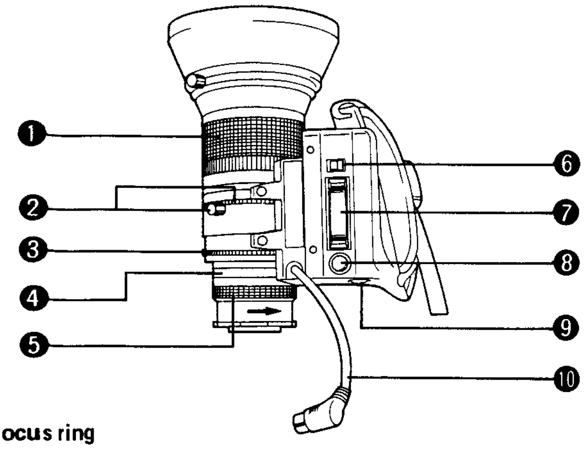
❼ **Lock screw**
Use to lock the viewfinder onto the camera.

❽ **VF connector**
Directly connected to this camera.

❾ **Viewfinder fixing pins**
Insertion pins for use in attaching to this camera.

❿ **Tally switch (TALLY)**
Turns the top tally lamp ❷ off even when the camera (VTR) is recording. The REC indicator inside the viewfinder will be kept ON.

Zoom Lens (HZ-713, optional)



❶ **Focus ring**
Focus adjustment ring.

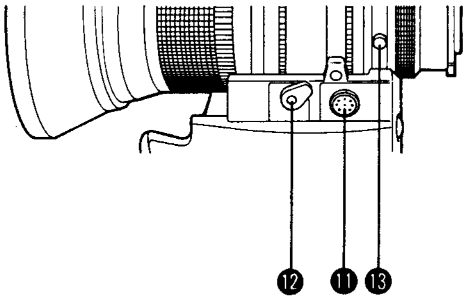
❷ **Zoom lever/zoom ring**
Ring and lever for manual zooming.

❸ **Iris ring**
When the iris mode switch ❻ is set to "MANU", the iris can be opened and closed manually using this ring. When it is set to "AUTO", the iris is adjusted automatically.

❹ **Back focus ring**
For the back focus adjustment, turn this ring.

❺ **Macro ring**
If the ring is turned fully in the direction of the arrow, macro shooting at a distance of about 3.5 cm from the subject will be possible.

❻ **Iris mode switch**
AUTO: For auto iris operation
MANU: For manual iris operation
*Set to "AUTO" position when the optional remote control unit RM-P200/RM-P300 is used.



❼ **Zoom servo lever**
The speed and direction of the servo zooming is controlled by this see-saw switch.

❽ **Return switch (RET)**
The return video signal from the VTR can be monitored in the viewfinder while this switch is depressed.

❾ **VTR switch (VTR)**
For the start/stop operation of the VTR.

❿ **Lens cable**
Connect the lens connector on the camera head.

⓫ **Zoom servo connector**
For connecting the optional zoom servo unit.

⓬ **Zoom mode knob (ZOOM)**
S: For power zooming
M: For manual zooming

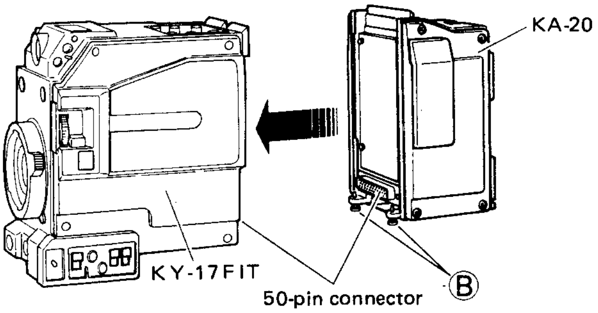
⓭ **Back focus securing knob**
For fixing back focus ring ❹.

INSTALLATION

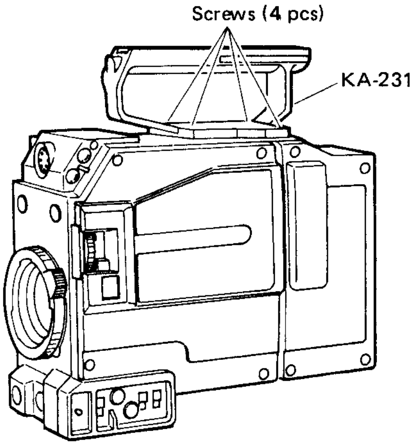
Installation of Camera Adapter (KA-20, optional) and Shoulder Pad (KA-220)

- KA-20 is a Camera Adapter designed for exclusive use of this camera.
- To fit the Camera Adapter KA-20 to this camera, the carrying handle KA-231 is necessary.

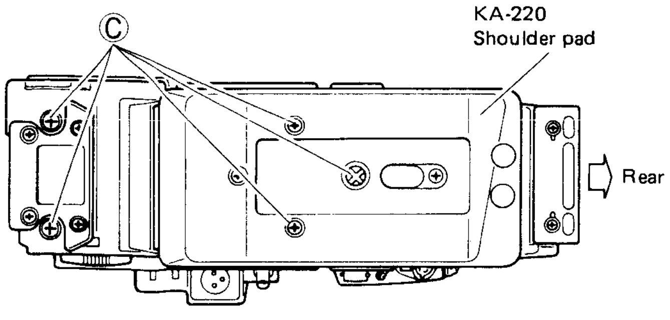
1. Attach the KA-20 to the camera's rear side by connecting the 50-pin connectors correctly.
   Turn two screws Ⓑ clockwise with a Phillips type (+) screwdriver to secure the KA-20.


KA-20
KY-17FIT
50-pin connector
B

2. Attach the carrying handle KA-231 to the top of the camera head with four screws provided with the KA-231. (See the figure below.)


Screws (4 pcs)
KA-231

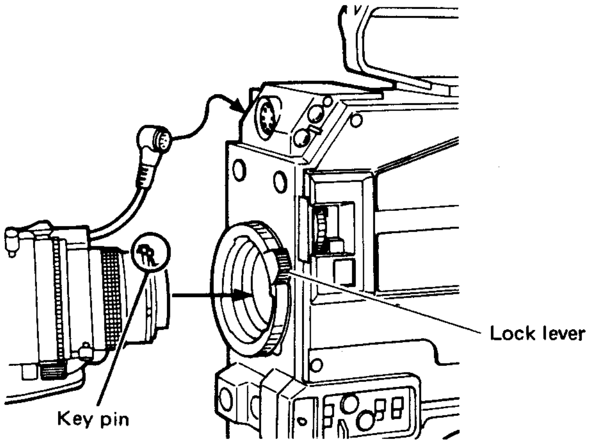
3. Attach the Shoulder Pad KA-220 to the camera head referring to the following figure (viewed from the shoulder pad).
   Turn five screws Ⓒ clockwise with a Phillips type screwdriver to secure the shoulder pad.


C
KA-220
Shoulder pad
Rear

Note: To join the camera head with the BR-S411 S-VHS VTR, refer to page 20.

Lens Installation (HZ-713, optional)

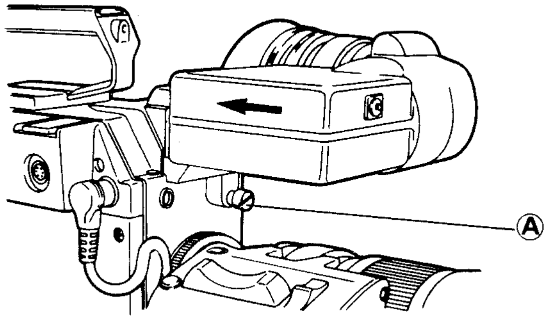
1. Be careful of the key pin of the lens and slot of the mount ring groove, then insert the lens flange into the mount groove firmly.
2. Turn the lock lever clockwise to fix the lens.
3. Connect the lens cable to the camera head.


R
Lock lever
Key pin

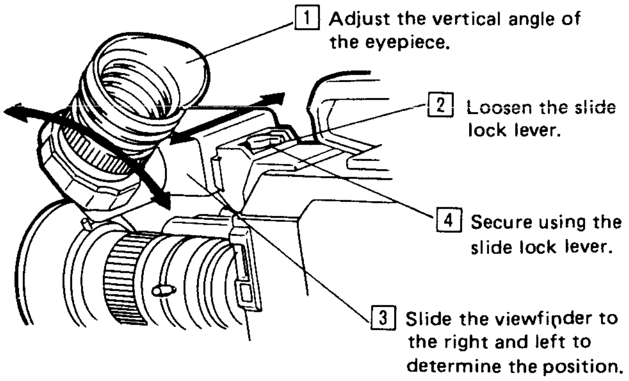
Note:
Make sure that the lens is firmly attached. Otherwise, the back focus adjustment may be incorrect.

Viewfinder Installation (VF-P10, optional)

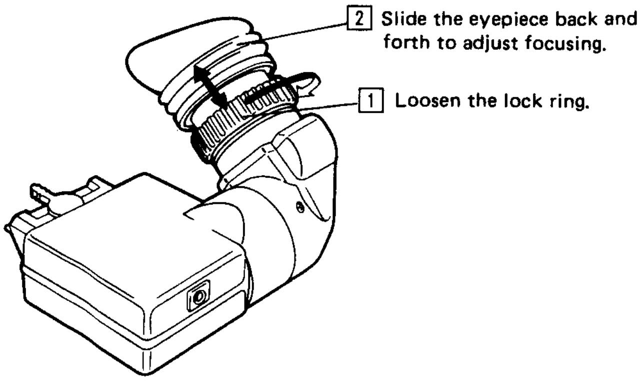
1. Mate the viewfinder fixing pin with the mounting hole of the camera head, then insert.
2. Insert it all the way, then confirm that the viewfinder has been positively connected and turn viewfinder fixing screw Ⓐ clockwise to lock it.



- **Eyepiece adjustment**
  - Vertical angle and left/right slide adjustment


1 Adjust the vertical angle of the eyepiece.
2 Loosen the slide lock lever.
4 Secure using the slide lock lever.
3 Slide the viewfinder to the right and left to determine the position.

- Focusing adjustment

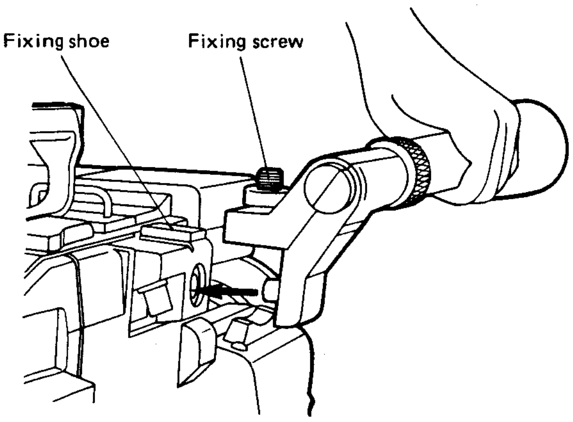


Microphone Installation

Exclusive microphone (M-K50 or MV-P602, optional)

1 Insert the microphone into the mic holder fixing shoe on the right top of the camera.

2 Secure the microphone using the fixing screw.



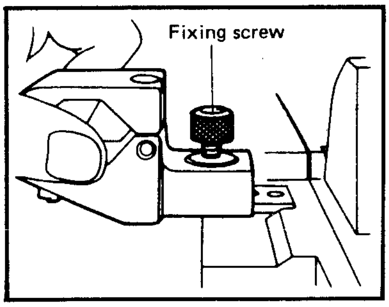
Note:

- Lens motor noise or mechanical friction noise may be picked up by the microphone and recorded. Check possible noise conditions in advance.

Ordinary microphone

Install the microphone onto the camera head using the optional mic holder (Part No. SCUA30312, service parts).

1 Insert the mic holder into the mic holder fixing shoe on the right top of the camera, then fix it using the fixing screw.



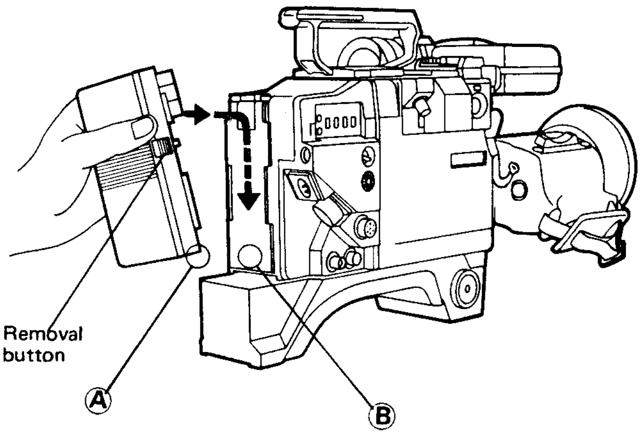
2 Connect the microphone output to the MIC connector on the camera head.

Battery Pack (DC-C11, optional) Installation

1 Press battery pack guide Ⓐ onto Ⓑ on the battery guide, then press it firmly to the camera using Ⓑ as the reference. Match the battery pack guide with the battery guide, then press it down until it is locked.

2 To remove the battery pack, slide the removal button towards you, then move the battery pack upward.

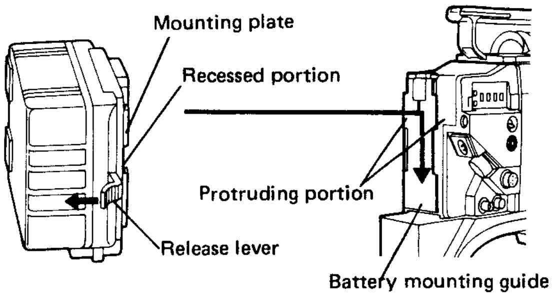
- **Battery pack**
  - With a fully-charged DC-C11 battery pack, the camera will operate for approx. 70 minutes at normal temperatures (about 25°C (77°F)).
  - Be sure to charge the battery pack before recording. It is also recommended to have some spare charged battery packs ready.
  - Replace the battery pack when the BATT indicator in the viewfinder starts flickering.
  - Use the optional AA-P250 AC power adapter to charge the battery pack. For the charging procedure, refer to the AA-P250's instruction manual.



Battery Holder (BH-P20, optional) Installation

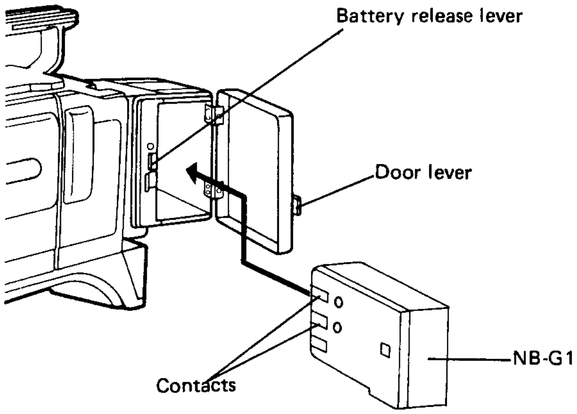
1 Align the recessed portion of the mounting plate of the BH-P20 with the protruding protion of the battery mounting guide on the back of the camera. Push the BH-P20 down until it locks.

2 To remove the BH-P20, push the release lever, and slide the BH-P20 up.


Mounting plate
Recessed portion
Protruding portion
Release lever
Battery mounting guide

Inserting the NB-G1 battery pack (optional)

1. Open the compartment door by pushing the door lever away from the BH-P20.
2. Insert the NB-G1 battery pack with its contacts facing the camera, as illustrated.
   When properly inserted, the battery pack will automatically be locked by the battery release lever.
   - To remove the battery pack, push the battery release lever away from the BH-P20; the battery pack will be unlocked so it can be removed.


Battery release lever
Door lever
NB-G1
Contacts

AC Power Adapter AA-P200 (optional) Installation

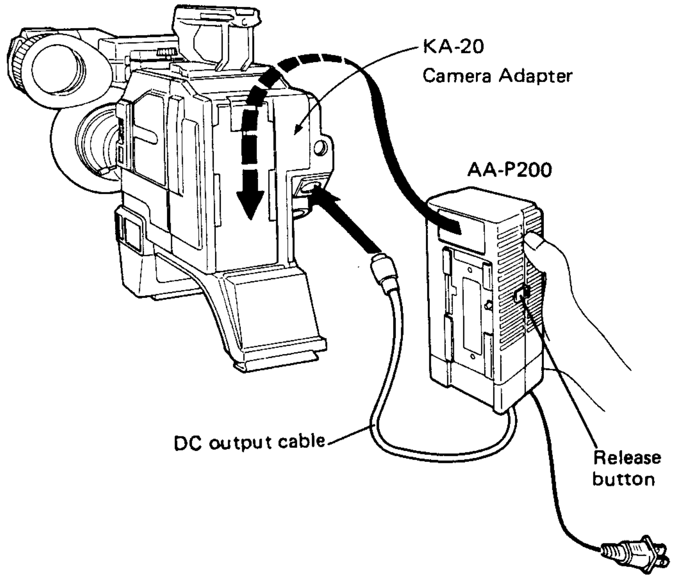
(U version only)

This describes mounting method of the AC power adapter AA-P200 which can be directly mounted onto this camera.

1 As shown, insert the power adapter into the battery quide on the back of the camera head from above, then press it down.

2 Connect the AA-P200 DC output cable to the DC IN connector on the camera head.

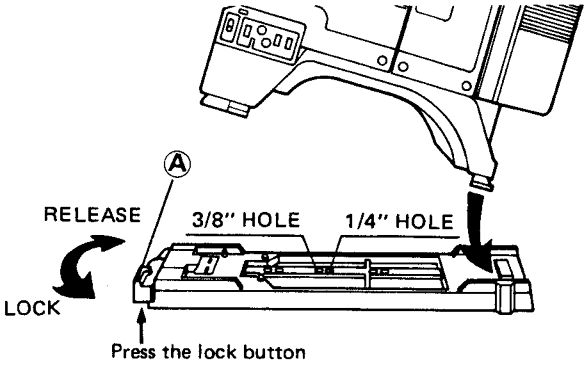
- To remove the power adapter, pull it upward while pressing the release button.


KA-20
Camera Adapter
AA-P200
DC output cable
Release button

Tripod Installation

When the shoulder pad (KA-220) is fitted, use the tripod base KA-500X.

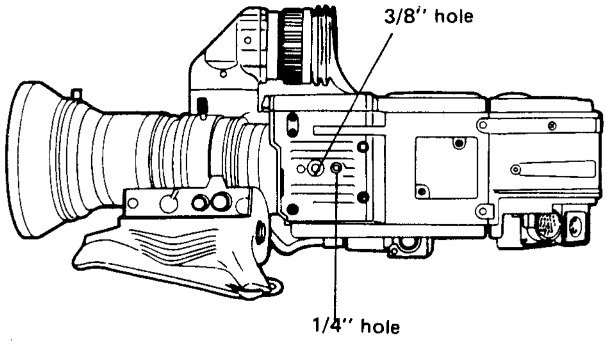
1. Use either the 1/4" or 3/8" holes to match the tripod used, select the front, middle or rear holes of the camera for maximum balance, and taking its center of gravity into consideration.
2. While pressing the lock button, set lock lever Ⓐ to its released position (turn it clockwise).
3. After engaging the notch on the rear of the camera with that of the tripod base, place the camera on the tripod base.
4. While pressing the lock button, set lock lever Ⓐ to its locked position by turning it to secure the camera.



> **Caution:**
> When rotating the lock lever, turn it while holding the camera's handle with one hand. Turn the lever slowly to prevent the camera from dropping off the tripod.

In the case the shoulder pad (KA-220) is not used (KA-500X cannot be utilized)

As shown on the right, the 1/4" and 3/8" holes are provided on the bottom of this camera. Use these in accordance with the tripod used.



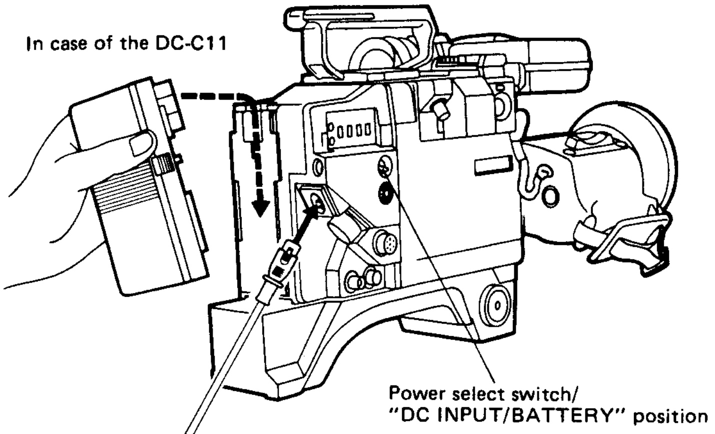
POWER SOURCES (AA-P200 is available for U version only.)

There are four methods of powering this camera as described below.

(1) Power from the battery pack (DC-C11 or NB-G1, optional) or the AC power adapter AA-P200, optional.
(2) Power from the AC power adapter (AA-P250, optional).
(3) Power from a portable VTR.
(4) Power from the remote control unit (RM-P200/RM-P300, optional).

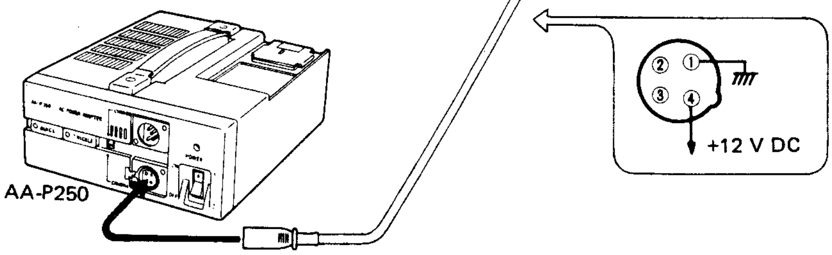
Power from the DC-C11/NB-G1 (optional battery pack) or the AA-P200 (optional AC adapter)

1. Install the DC-C11, NB-G1 or AA-P200 to be used to this camera. (Refer to the installation method on pages 9 and 10.)
2. If the power select switch on the camera head is set to the "DC INPUT/BATTERY" position, power is fed to the camera head.



Power from the AA-P250 (AC power adapter)

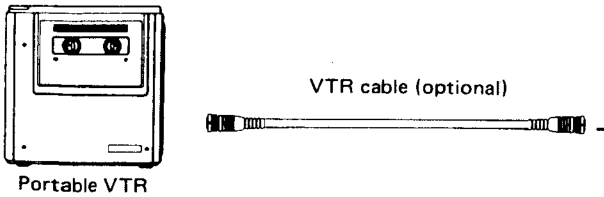
1. Connect this camera to the AA-P250 using the power cable supplied with the adapter.
2. If the power select switch on the camera head is set to the " DC INPUT / BATTERY " position, power is fed to the camera head.



Power from a portable VTR

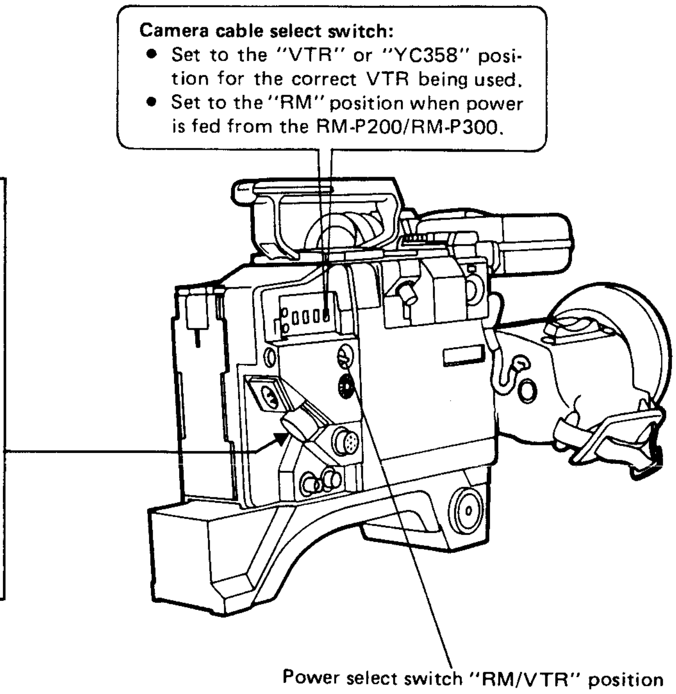
1. Connect the camera to the VTR using a VTR cable which matches the VTR used. (Refer to page 12.)
2. When a VTR with a composite or component (Y, B-Y, R-Y) input is used, set the camera cable select switch on the camera head to the "VTR" position. When an S-VHS VTR is connected, set the switch to the "Y/C 358 (443)" position.
3. When the power select switch on the camera is set to the "RM/VTR" position, power is fed to the camera head.

Caution:
If the camera is operated from the battery in the portable VTR, the battery operation time could be very short due to the small capacity of the battery. The power supply to the camera should not exceed the rated current capacity of the VTR.

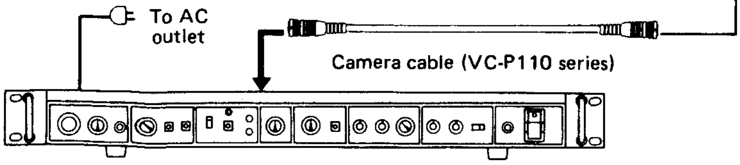


Power from the RM-P200/RM-P300 (optional remote control unit)

1. Using the remote control cable (VC-P110 series), connect the camera head to the RM-P200/RM-P300.
2. Set the camera cable select switch to the "RM" position.
3. When the power select switch on the camera is set to the "RM/VTR" position, power is fed to the camera head.



Camera cable select switch:
- Set to the "VTR" or "YC358" position for the correct VTR being used.
- Set to the "RM" position when power is fed from the RM-P200/RM-P300.

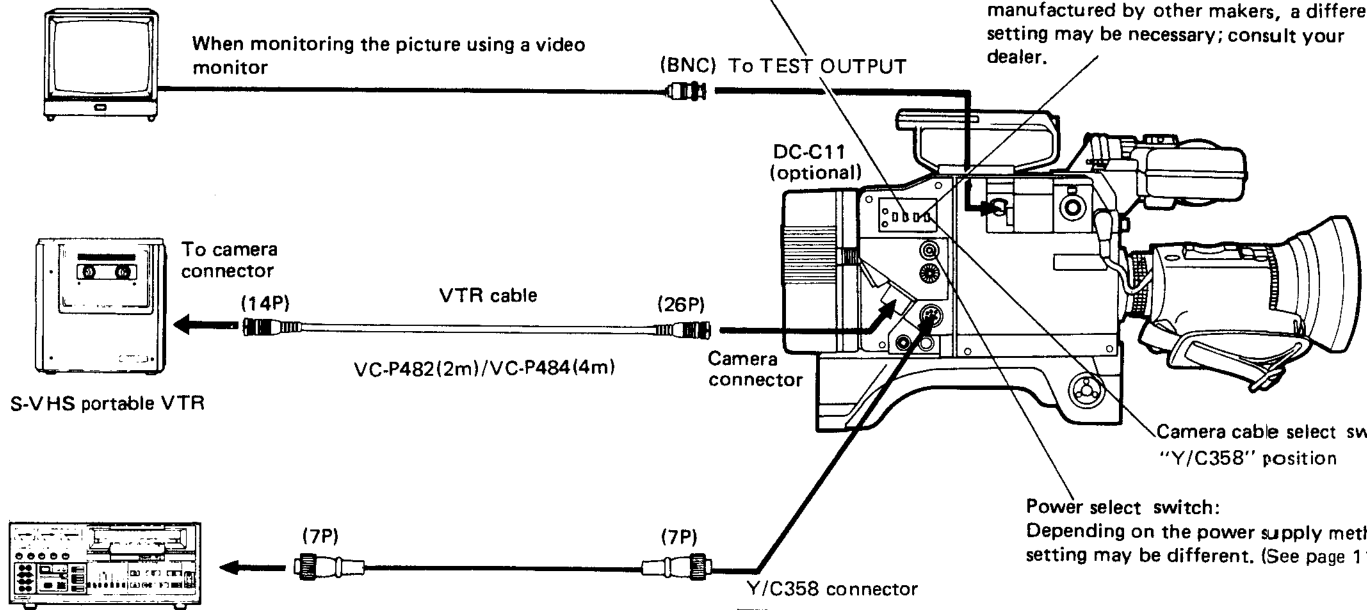


RM-P200

CONNECTION TO VIDEO RECORDER

Before making connections, be sure that the power of the camera and units used is set to OFF.

• Connecting to a VTR with the Y/C inputs (S-VHS video recorder)



Mic output level select switch: Set to either L (-52 dB) or H (-20 dB) according to VTR's audio input level.

VTR trigger mode switch: When an S-VHS VTR manufactured by JVC is used, set to the "B" position. However, some VTRs or video recorders manufactured by other makers, a differente setting may be necessary; consult your dealer.

When monitoring the picture using a video monitor

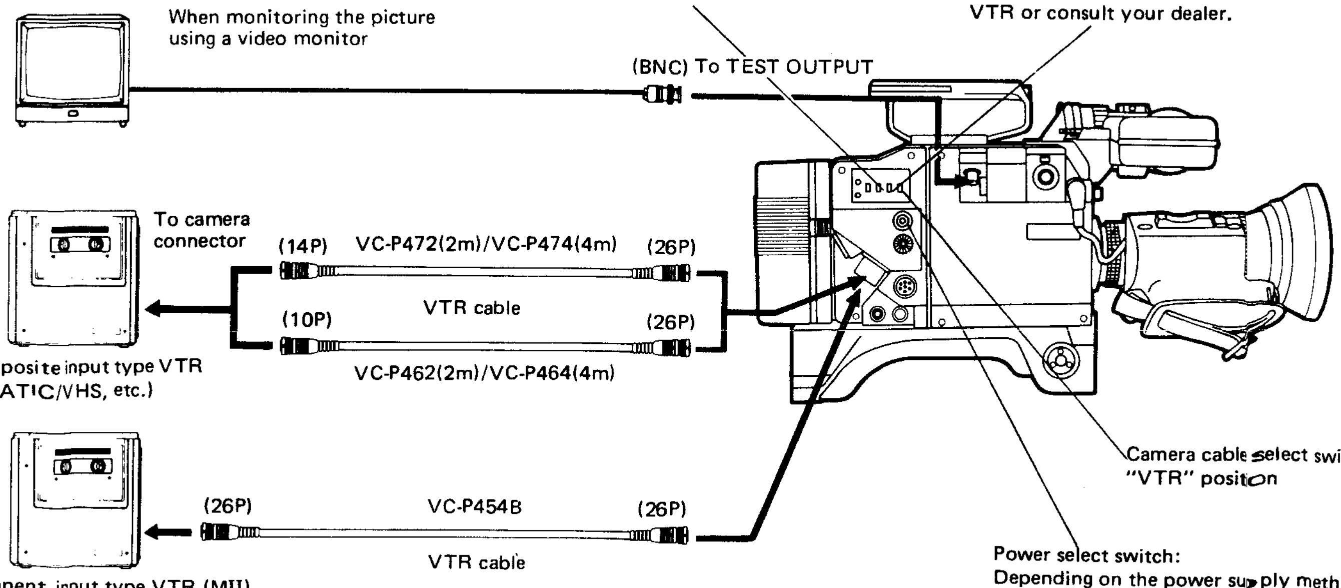
Camera cable select switch: "Y/C358" position

Power select switch: Depending on the power supply method, setting may be different. (See page 11.)

Video monitor
(BNC) To TEST OUTPUT
DC-C11
(optional)
To camera connector
(14P)
VTR cable
(26P)
VC-P482(2m)/VC-P484(4m)
Camera connector
S-VHS portable VTR
(7P)
(7P)
Y/C358 connector
S-VHS stationary VTR

Note: VC-P482/VC-P484
The VTR cable is exclusively for S-VHS recorders. Even if the number of connector pins of another cable is the same, there is no compatibility.

• Connecting to a VTR with the composite input (U-VCR/VHS, etc.) or component input (MII)



Mic output level select switch: Set to either L (-52 dB) or H (-20 dB) according to the VTR's audio input level.

VTR trigger mode switch: The setting may differ depending on the VTR used. Refer to the instruction manual of the VTR or consult your dealer.

When monitoring the picture using a video monitor

Camera cable select switch: "VTR" position

Power select switch: Depending on the power supply method, setting may be different. (See page 11.)

Video monitor
(BNC) To TEST OUTPUT
To camera connector
(14P)
VC-P472(2m)/VC-P474(4m)
(26P)
(10P)
VTR cable
(26P)
VC-P462(2m)/VC-P464(4m)
Composite input type VTR
(U-MATIC/VHS, etc.)
(26P)
VC-P454B
(26P)
VTR cable
Component input type VTR (MII)

BEFORE SHOOTING

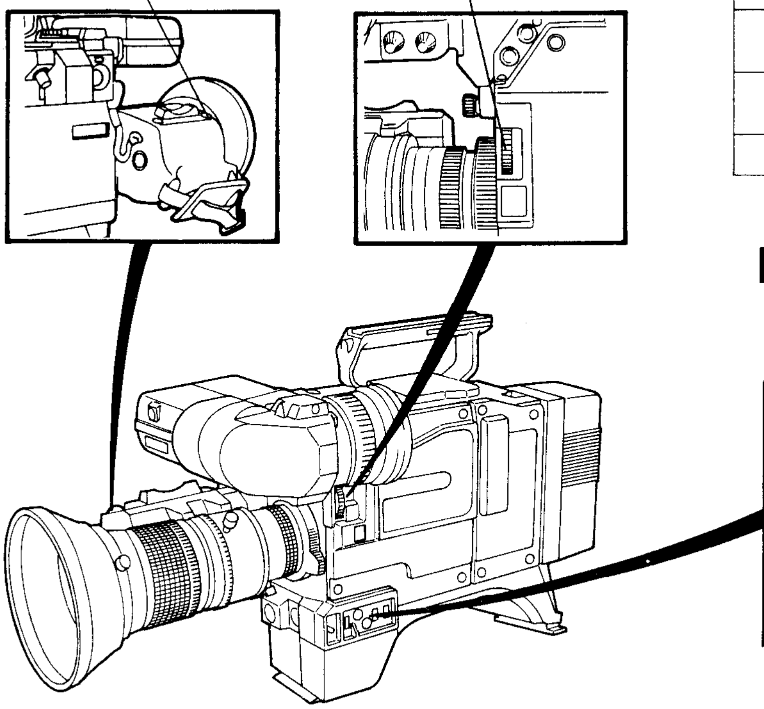
To record a clear picture with correct colors, it is necessary to adjust the back focus and auto setup.

Once the back focus is adjusted at the time of lens installation, subsequent adjustment is basically not necessary. However, with auto setup adjustment, be sure to adjust it in advance every time shooting is done. Prior to adjustment, connect the VTR, TV monitor, etc. in accordance with the prescribed connection methods, then set up camera switches and controls as shown below.

1. PREPARATION

1 Iris mode switch: AUTO

2 Filter disk: Set according to the table on the right.

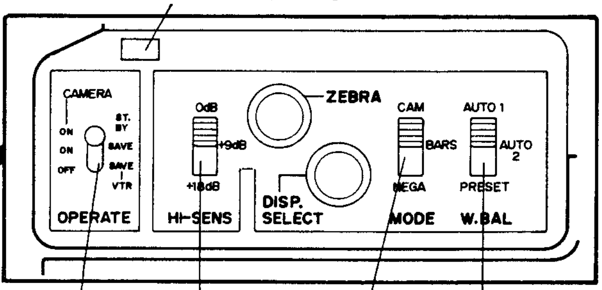


Upon completion of setting, point the camera at an appropriate object, then operate the lens focus lever and zoom lever and monitor the picture in the viewfinder screen or monitor TV screen.

Filter indication	Color temperature	Shooting conditions
1	CLOSE	When the camera is not used
2	3200K	Sunrise or sunset, studio lighting
3	5600K	Outdoors; cloudy or rainy weather
4	5600K + 25 % ND	Outdoors; bright or direct sun

3 Set the switches as shown below.

If the LED does not glow in red, no power is fed to the camera. Supply power by referring to page 9.


CAMERA
ON
ON
OFF
ST. BY
SAVE
SAVE
VTR
OPERATE
0dB
+9dB
+18dB
HI-SENS
ZEBRA
DISP. SELECT
CAM
BARS
MEGA
MODE
AUTO 1
AUTO 2
PRESET
W.BAL

HI-SENS switch: 0 dB

WHITE BAL switch: AUTO 1 or AUTO 2

Operation switch: ON/ST-BY (or ON/SAVE)

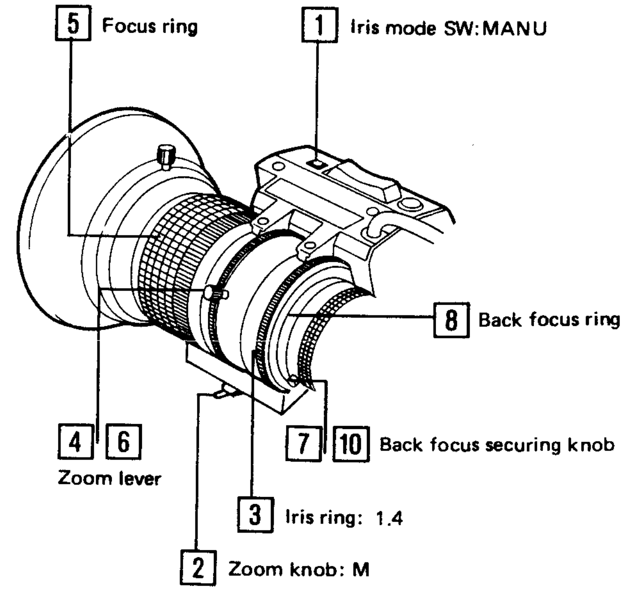
Camera/color bar select switch: CAM

2. BACK FOCUS ADJUSTMENT (for HZ-713)

Perform this adjustment while observing the TV monitor or viewfinder.

1 Set the iris mode switch on the lens to the "MANU" position.
2 Set the zoom knob on the lens to the "M" position.
3 Set the iris ring to "f1.4" (open).
At this time, if the lighting is too strong, reduce lighting or move to a darker place.
4 Fully turn the zoom lever to the TELE position.
5 Bring into focus using the focus ring.
6 Fully turn the zoom lever to the WIDE-angle position.
7 Loosen the back focus securing knob.
8 Turn the back focus adjustment lever, then adjust it to a position where the focusing is best.
9 Perform fine-tuning by repeating steps 4 to 8 a few times.
10 Finally, tighten the back focus securing knob.

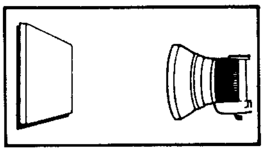
Note:
The back focus adjustment is more accurate when the distance between the subject (pattern) and camera is more than 3 m (10 ft.).


5 Focus ring
1 Iris mode SW:MANU
8 Back focus ring
4 6 Zoom lever
7 10 Back focus securing knob
3 Iris ring: 1.4
2 Zoom knob: M

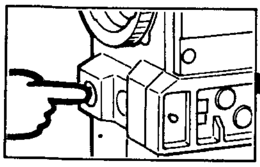
3. AUTO SETUP ADJUSTMENT (BLACK/WHITE BALANCE ADJUSTMENT)

- Start adjustment following steps 1 to 3 (Refer to "1. PREPARATION") described previously.
- Auto setup will be performed in the order of black, white and black for adjustment of balance.

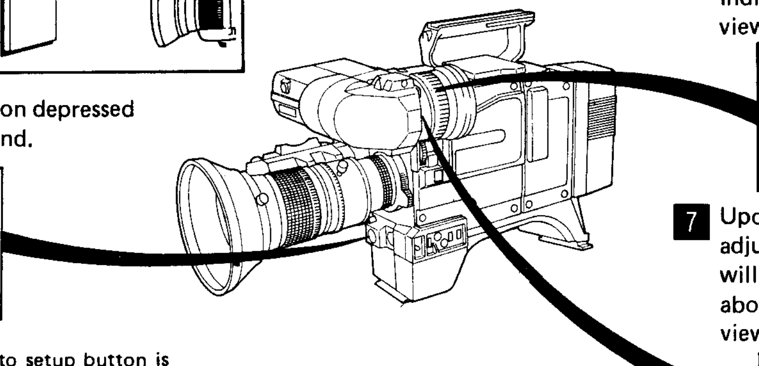
4 Shoot a white object (cloth, wall, etc) so as to fill the viewfinder screen.



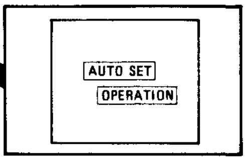
5 Hold the auto setup button depressed for longer than one second.



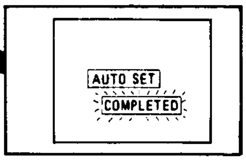
Note:
If the duration in which the auto setup button is being pressed is shorter than one second, only the white balance will be adjusted. Be sure to keep the button depressed for longer than one second for adjustment of the setup. For auto white balance, refer to page 15.



6 The auto setup operation will start, and the following indication will appear in the viewfinder screen.



7 Upon completion of the setup adjustment, "COMPLETED" will be indicated flashing for about 4 seconds in the viewfinder screen.

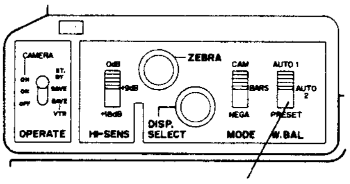


8 This completes the setup adjustment. The white balance state is automatically held in the built-in memory circuit.

NOTE

- **White balance memory**

This camera has two built-in white balance memory circuits and different color temperature states can be stored in the memory, individually.
If the above auto setup adjustment is performed with the W.BAL switch set to "AUTO 1". The white balance state will be held in memory "AUTO 1". Likewise, if it is done with the switch set to "AUTO 2", it will be held in memory "AUTO 2".



W.BAL switch

- **Display in the viewfinder**

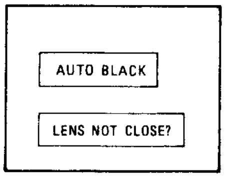
If the above auto setup adjustment has not been done correctly, the "COMPLETED" indication as described in 7 above will not appear in the viewfinder screen.
Instead, the following error message or more light message will appear.
If the error message appears, check for the following causes and items, then perform auto setup adjustment again.

> **Note:**
> - The error message and more light message will flicker in the screen for about 4 sec. as will in the "COMPLETED" indication, after 4 sec. if goes out. Pay attention to the contents of th indication.

- **Error message during auto black balance**

LENS NOT CLOSE?

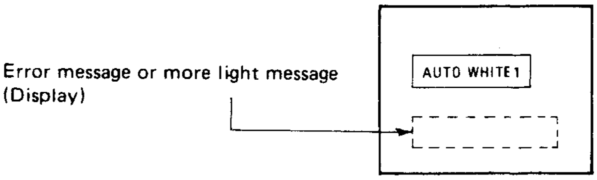
Cause: The lens does not perform auto operation.
Remedy: Check for lens cable connection.



(Display)

- **Error message during auto white balance (including the more light message)**

(The display shows an example in which the W.BAL switch is set to "AUTO 1".)



- **Error messages**

LOW LIGHT ERROR

Cause: Insufficient amount of light.
Remedy: Increase lighting or sensitivity using the HI-SENS switch. (If the sensitivity is increased, the S/N ratio will deteriorate.)

OBJECT ERROR?

Cause: The subject shot is not suitable.
Remedy: Check if the subject is a white object and change the subject if necessary.

OVER LIGHT ERROR

Cause: The incident light is too strong. The color temperature filter is not suitable.
Remedy: 1. Check to see if strong light such as sunlight or its reflection from the subject is directly introduced to the video camera.
2. Set the filter to the correct position.

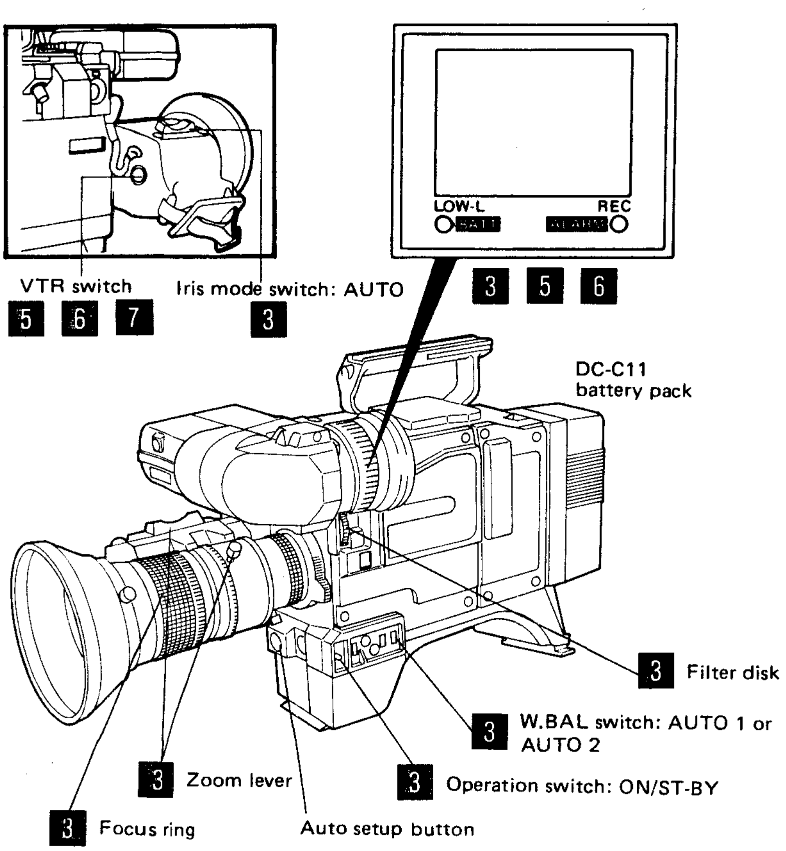
- **More light message**

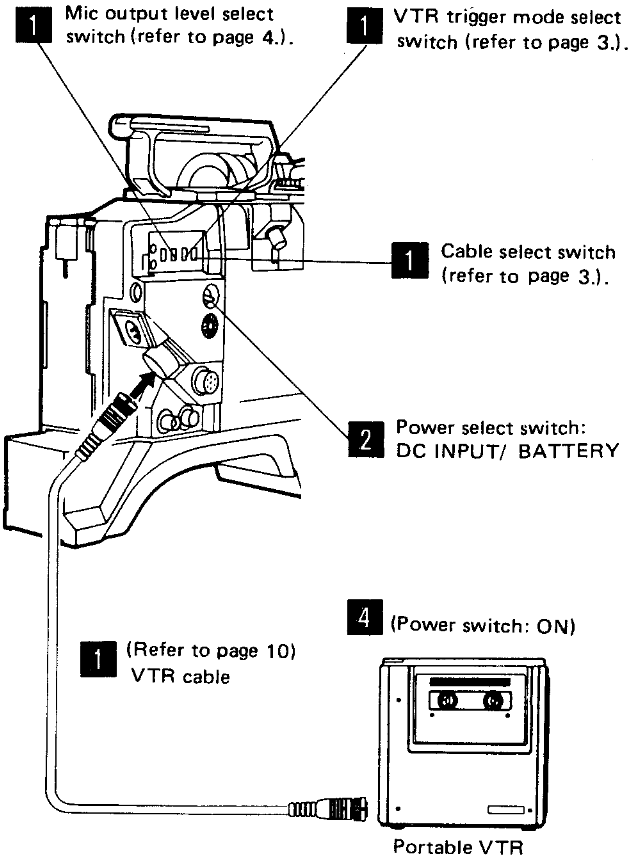
MORE LIGHT

This message is somewhat different from an error message. The "MORE LIGHT" indication appears when the amount of light is insufficient, indicating that the white balance has been automatically adjusted to a level detrimental to shooting. Although this situation may not be wrong; it is recommended that the amount of light be increased.

OPERATION

Recording using a portable VTR (When the DC-C11 is used)


VTR switch
5 6 7
Iris mode switch: AUTO
3
LOW-L
REC
BATT
ALARM
3 5 6
DC-C11 battery pack
3 Filter disk
3 W.BAL switch: AUTO 1 or AUTO 2
3 Zoom lever
3 Operation switch: ON/ST-BY
3 Focus ring
Auto setup button


1 Mic output level select switch (refer to page 4.).
1 VTR trigger mode select switch (refer to page 3.).
1 Cable select switch (refer to page 3.).
2 Power select switch: DC INPUT/ BATTERY
4 (Power switch: ON)
1 (Refer to page 10) VTR cable
Portable VTR

Preparation for recording

(The following steps, numbered **1** through **7**, correspond to the numbers in the illustrations above, showing controls and switches to be operated in respective steps.)

1 Connect the portable VTR following the connection method given on page 12.

2 Supply power to the camera following the power supply method given on page 11.

> **Note:**
> When the BATT indicator or "BATT EMPTY?" display in the viewfinder flickers, the battery pack is nearly exhausted; replace with a fully-charged battery pack.

3 Perform auto setup adjustment following "Before shooting" on page 14.

4 Set the VTR to the recording mode.
For the operation of the VTR, refer to the instruction manual of the VTR.

5 When the tape in the VTR starts moving, press the VTR switch on the lens.
The VTR enters the recording pause mode.
This completes the preparation.

Recording

6 When the VTR switch on the lens is pressed, recording will commence. At this time, the REC lamp in the viewfinder comes on.

7 To stop recording, press the VTR switch again.
The VTR stops in the recording pause mode. The REC lamp goes out.

Power-save function of the VTR

If a 14-pin VTR (example: CR-4900) with a power save circuit is used, the power of the VTR can be saved during the interval from the recording pause to the restart of recording.
Operate as in the following:

[1] Upon completion of the preparation for recording, set the operation switch to the "ON/SAVE" position.
The Upper Drum of the VTR will be switched off in the recording pause mode.

[2] To start recording, set the operation switch to the "ON/ SAVE" position.
The Upper Drum of the VTR will be switched on and the VTR enters the recording pause mode.

[3] When the VTR switch on the lens is pressed, recording will start.

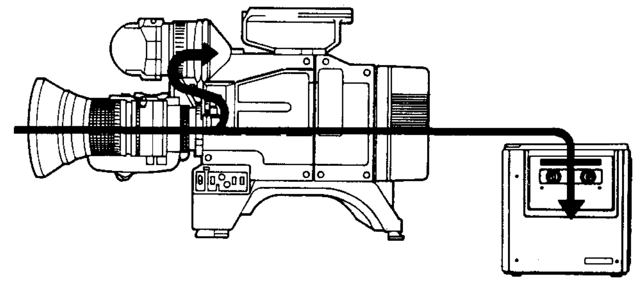
White balance adjustment

If the camera is moved from indoors to outdoors or vice versa, the type of light source changes. This requires readjustment of white balance.
White balance can be adjusted by following the same procedure as described in "AUTO SETUP ADJUSTMENT" on page 14, but the way the auto setup button is pressed differs.
For adjustment of white balance, press the auto setup button once and release it immediately. Be careful not to keep it depressed, otherwise the auto setup adjustment mode will be engaged.
The display in the viewfinder shows AUTO WHITE , instead of AUTO SET . The rest is the same as for auto setup adjustment.

Monitoring the picture

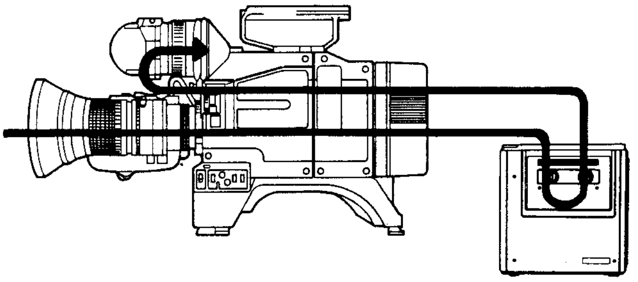
When the camera is connected with a portable VTR using the VTR cable, the picture can be monitored in the viewfinder.

Monitoring the picture from the camera

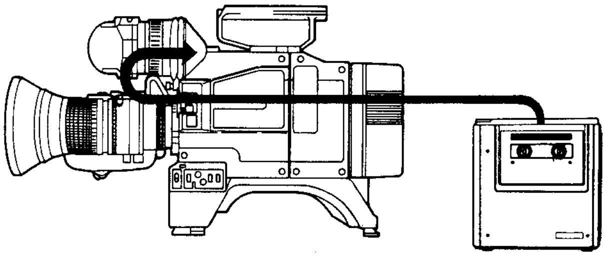


Monitoring the E-E mode picture from the VTR

While the return button (RET) on the lens is held depressed, or when the VF AUX video switch on the portion of the camera where the microphone is mounted is set to the "AUX" position, the return video signal can be monitored.
However, unless the VTR used has a return video signal function this is not possible. (This is impossible with a 10-pin type VTR.)



Monitoring the VTR playback picture



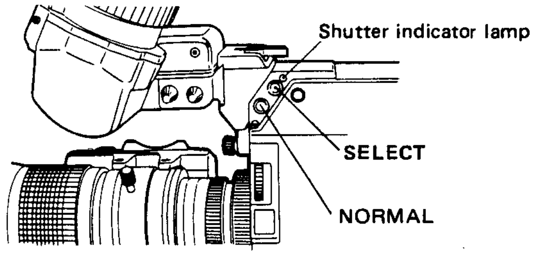
- For the playback operation of the VTR refer to its instruction manual.

Contour (contour compensation) ON/OFF switch

To provide a sharper image, this camera has a built-in 2H contour compensation circuit for both vertical and horizontal signals. This circuit is factory-preset to ON.
The position of the contour switch can be confirmed in the character display. For details, refer to the character display description on page 17.
To switch off the contour compensation, remove the side cover on the right of the camera, set the CONTOUR switch on the internal CP board to "OFF". For detailed operation, consult your dealer.

Electronic shutter

This function goes a long way when analyzing the motion of a fast moving object, etc. The position can be changed in 5 steps: *1/100, 1/250, 1/500, 1/1000 and 1/2000, in addition to the normal **1/60 sec.
As the shutter speed is made faster to *1/100, 1/250, 1/500, 1/1000 and 1/2000, the senditivity will drop; therefore, shooting at a dark place is not possible. For selection, use the shutter speed select buttons (two buttons) on the top of the filter turret to the right side of the camera.
When the power of the camera is switched "ON", **1/60 sec is selected as an initial setting. At this time, the shutter indicator lamp shown below does not light.



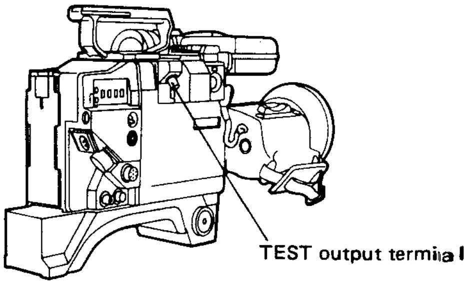
- **Selecting the shutter speed**

To change the shutter speed, press the upper button (SELECT) of the two buttons.
The shutter speed will sequentially change from *1/100 to 1/250, from 1/250 to 1/500, to 1/1000, and to 1/2000 every time this button is pressed and cycle in a loop. At this time, the shutter indicator lamp will come on. To set to the normal **1/60 sec, press the lower button (NORMAL) of the two.
The shutter speed setting can be confirmed by observing the viewfinder screen using the character display function of this camera.
For the display indication, refer to the character display indication on page 17.

* : 1/120 for E version.
** : 1/50 for E version.

Selecting the TEST OUT signal

The TEST output terminal on the left of the camera is factory-preset so that the composite video signal (VBS) is output. However, it is also possible to output any one of R, G, or B signal by internal switch. (* R, G or B signal does not have a color component. Therefore, even if it is connected to a color monitor, it appears as a monochrome signal on the screen.)

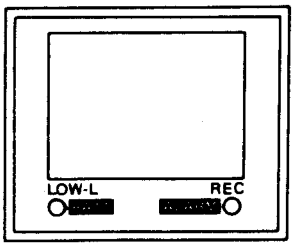


To switch this, remove the side cover on the right of the camera, then change the setting of the "PIX SELECT" switch on the internal CP board. When the test output signal is changed, the signal to be monitored on the viewfinder screen is also changed accordingly.
For further detailed operation, consult your JVC-authorized dealer.
The type of signal to be output to the TEST output terminal can be confirmed in the viewfinder screen using the display function of this camera.
Refer to the character display indication described later.

WARNING INDICATION AND CHARACTER DISPLAY

Warning indication using LEDs

The viewfinder includes the following indicator lamps, giving a warning during shooting.



- LOW-L/BATT (red)

LOW-L: Lights when the camera's video output is too low. Even if the lamp is lit, recording can be done but the picture will be dark; however, this indicates that additional lighting is necessary.
BATT: Flashes when the battery in the camera or VTR (depending on the VTR used) is almost exhausted.

- REC (green)

REC: The REC (recording) lamp lights interlocked with the indicator lamp in front of the viewfinder.
ALARM: Flashes when the VTR connected to the camera has trouble or the tape comes to the end (depending on the VTR used).

Note:
The above warning functions depend on the VTR connected. Refer to the VTR's instruction manual.

Video signal level indication

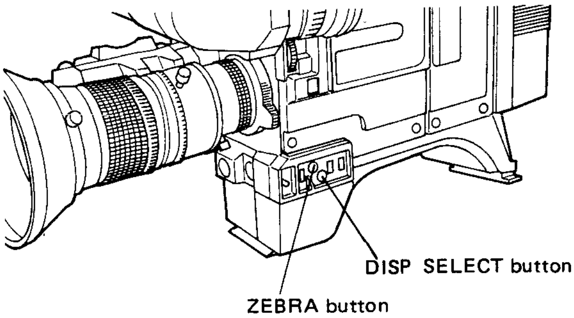
Video signal level (90 to 100 % of shooting image) is indicated by zebra pattern in the viewfinder screen.
When the auto iris is activated, the lens iris is automatically adjusted, however, in the case it is desired to adjust it manually, this zebra indication is useful as an adjustment standard.
This zebra indication can be on/off with the zebra button.

Character display indication

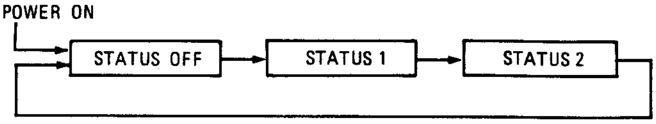
The display indications include the STATUS indication, MODE indication and WARNING indication; the details of each are as follows:

■ STATUS indication

Various control switches and their settings are indicated by characters.
There are two display screens, which can be selected using the DISP SELECT button.



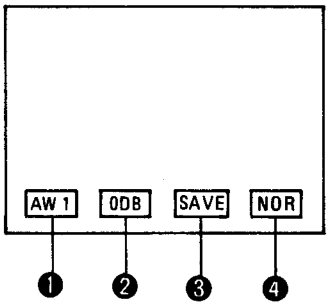
The DISP SELECT button is a push-button switch, which changes as follows every time it is pressed.



The STATUS OFF indicates no-indication state, to which setting the display is always initialized when the operation switch is switched ON from OFF.

STATUS 1 indication

The following display appears in STATUS 1 mode.



❶ Position indication of the W.BAL switch

PRE: Indicates that the W.BAL switch is set to the "PRESET" position. The white balance of the camera is set to the preset (3200K) state and the auto setup function cannot be activated.

AW 1 : Indicates that the W.BAL switch is set to the "AUTO 1" position. The white balance of the camera is set to the balance which is held in the "AUTO 1" memory of the camera.
If the auto setup adjustment is made while this is indicated, the white balance will be automatically adjusted and the balance at this point will be rewritten to the AUTO 1 memory.

AW 2 : Indicates that the W.BAL switch is set to the "AUTO 2" position. Just as in the above AUTO 1, the white balance of the camera is set to the balance stored in the "AUTO 2" memory. If the auto setup adjustment is made while this is indicated, the AUTO 2 memory will be rewritten.

MANU: This is indicated if the optional remote control unit RM-P200 is connected and its W.BAL switch is set to the MANUAL position. Note that the auto setup adjustment or auto white balance adjustment cannot be done from the camera.

* For the auto setup adjustment, refer to page 14.

❷ Position indication of the HI-SENS switch

0 : Indicates that the HI-SENS switch is set to the "0 dB" position.
+9 dB : Indicates that the HI-SENS switch is set to the "+9 dB" position.
+18 dB : Indicates that the HI-SENS switch is set to the "+18 dB" position.

❸Indication of the VTR mode

SAVE: Indicates that the VTR is in the SAVE mode.
STDBY: Indicates that the VTR is in the ST-BY mode.
REC: Indicates that the VTR is in the REC mode.

Note:
"SAVE" indication is only when a 14-pin VTR with a power save facility is used. Nothing is indicated when a VTR other than this is used.

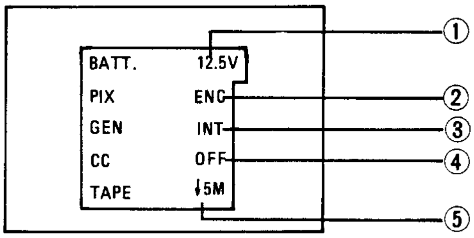
❹Electronic shutter speed indication

NOR : Indicates that the shutter speed is set to **1/60 sec.
100 : Indicates that the shutter speed is set to ***1/100 sec.
250 : Indicates that the shutter speed is set to 1/250 sec.
500 : Indicates that the shutter speed is set to 1/500 sec.
1000 : Indicates that the shutter speed is set to 1/1000 sec.
2000 : Indicates that the shutter speed is set to 1/2000 sec.

* For changing the electronic shutter speed, refer to page 16.
**1/50 for E version.
***1/120 for E version.

STATUS 2 indication

The following display appears in the STATUS 2 mode.



① Battery voltage indication
The battery voltage will be indicated digitally.

② Signal indication of TEST OUT/VF OUT
The type of video signal appearing at the camera's TEST OUT terminal and viewfinder screen is indicated.

PIX ENC: The encoder output (Composite) signal is output.
PIX R: The red signal is output.
PIX G: The green signal is output
PIX B: The blue signal is output.

Note:
- The camera is factory-preset to the "PIX ENC" position. To obtain another signal output, change the setting of the "PIX SELECT" switch inside the camera. (Refer to page 16.)
- When the foregoing PIX R, PIX G or PIX B signal is output, the signal does not have a color component. Therefore, even if it is connected to a color monitor, it appears as a monochrome signal on the screen.

③ GENLOCK mode indication
Indicates the genlock mode of the camera.

GEN INT: Operates by the internal SSG (sync signal generator) of the camera (INT mode).
GEN EXT: Indicates that the camera is genlocked to an external signal (EXT mode).

* As for the connection with the external signal source in the EXT mode, refer to page 19.

④ Contour indication

CC ON: The contour compensation is being made.
CC OFF: The contour compensation is not being made.

* To switch ON or OFF the contour compensation, use the internal switch. For its operation, refer to page 16.

⑤ Remaining tape indication
When the amount of remaining tape in the VTR becomes low, the remaining time is indicated. This is indicated only when the VTR used has a tape remaining detection circuit and can output a signal to the camera.

TAPE ↓10M: When the tape remaining time becomes less than 10 minutes, this is indicated.
TAPE ↓5M: When the tape remaining time becomes less than 5 minutes, this is indicated.

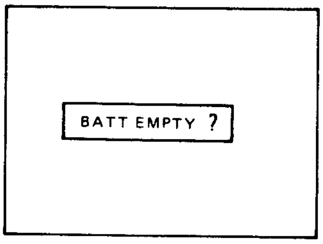
* When the remaining tape time is 10 minutes or more, nothing is indicated.

2 MODE indication

The execution mode during the auto setup adjustment and auto white balance adjustment will be indicated.
When the auto setup button is pressed, if the status indication is displayed, it will disappear, and be replaced by the mode indication.
Upon completion of the auto setup operation or auto white balance operation, the results will be indicated for about 4 seconds, then the original status indication will be resumed.
For the details of the execution mode indication, refer to "auto setup adjustment" on page 14.

3 WARNING indication

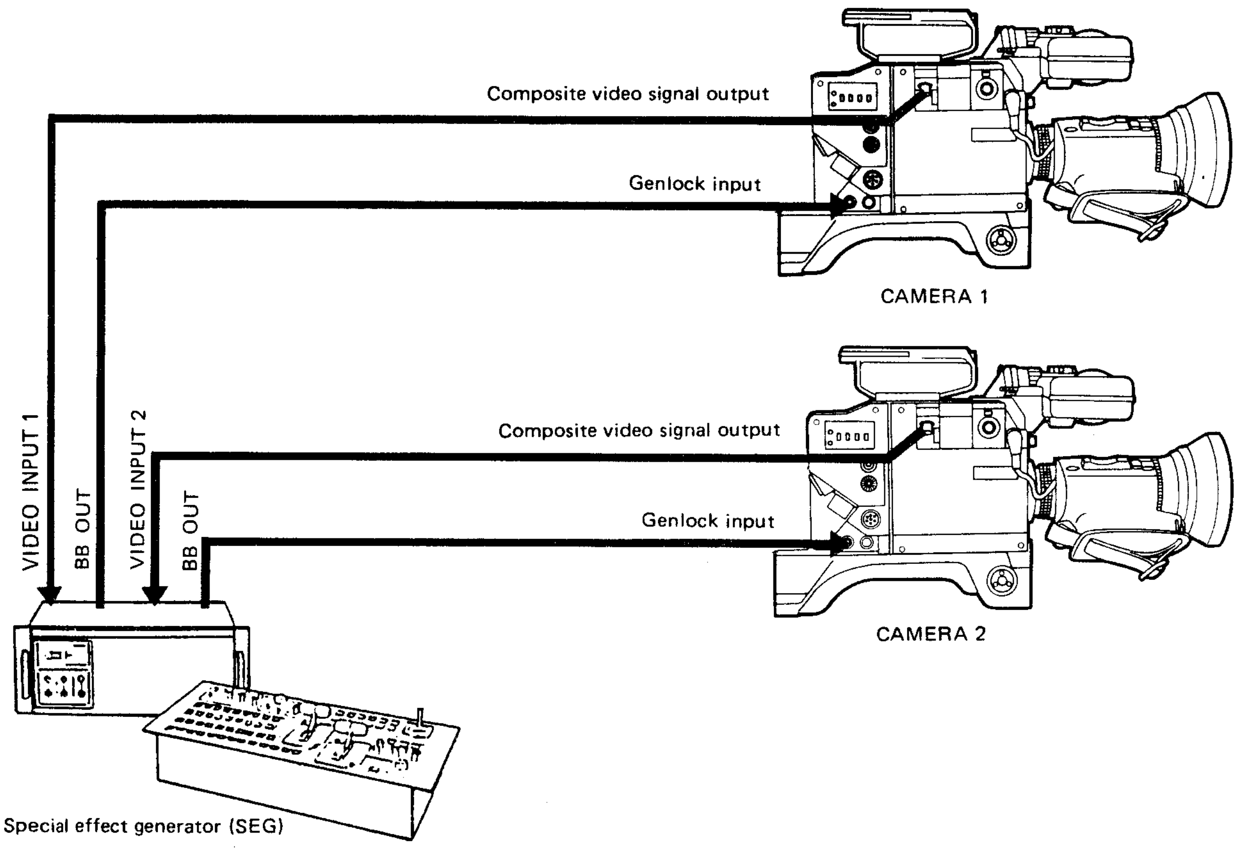
When the battery is exhausted, the following indication will flash.
This indication will supersede other indications (STATUS and MODE).
When this indication appears, replace the old battery pack with a fully-charged battery pack as soon as possible.



GENLOCK OPERATION

When pictures from more than one camera are processed (fade-in, fade-out, mix/wipe) using a special effect generator (SEG), etc., each camera should be genlocked.

The genlocking is done by supplying the same composite video signal (VBS) or black burst signal (BB) to the GENLOCK input terminal of each camera.

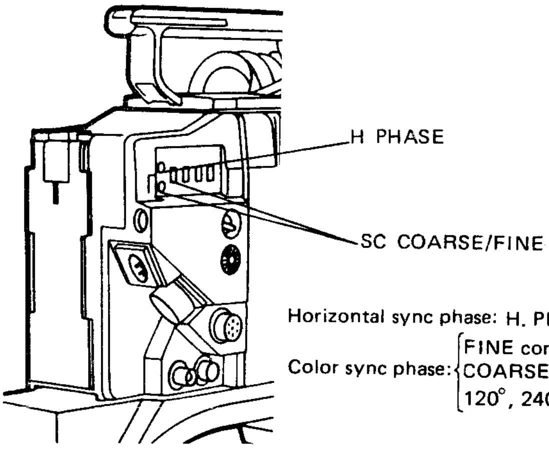

Composite video signal output
Genlock input
CAMERA 1
Composite video signal output
Genlock input
CAMERA 2
VIDEO INPUT 1
BB OUT
VIDEO INPUT 2
BB OUT
Special effect generator (SEG)

> **Note:**
> - It is not possible to genlock this camera using the playback signal of the VTR. If you do, it may cause sync disorder or fluctuations in color phase. However, this is not a failure, but because the VTR's playback signal has time axis fluctuations equivalent to wow & flutter of a tape recorder. When the VTR's playback signal has to be used as the reference signal, the signal should be corrected using a time base corrector (TBC), etc.

Phase adjustment

The illustration above shows an example of connecting a special effect generator to the cameras. If more than one camera is used as in this example, the horizontal phase and subcarrier phase of each camera output (VIDEO OUT) should be adjusted and matched with the reference signal supplied to the camera from outside.

For adjustment, use the following switches and controls on the left side of the camera.


H PHASE
SC COARSE/FINE

Horizontal sync phase: H. PHASE control

Color sync phase:
- FINE control ±60°
- COARSE switch 0, 120°, 240°

CAMCORDER CONFIGURATION WITH VTR

This camera is designed to configure a Camcorder with an S-VHS VTR (specified in the following).
For use of this application, the following units are optionally required.

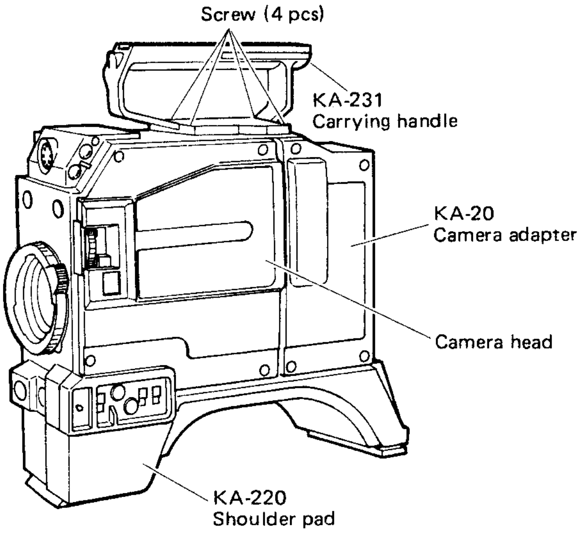
VTR to be used	Cassette size	Recording hours (max.)	Options required
BR-S410 BR-S411	Standard S-VHS	2 hours (SP mode)	KA-220 Shoulder Pad KA-232 Carrying Handle
BR-S420C	S-VHS C (compact)	20 minutes (SP mode)	KA-220 Shoulder Pad (Use Carrying Handle provided with BR-S420C.)

BEFORE INSTALLATION

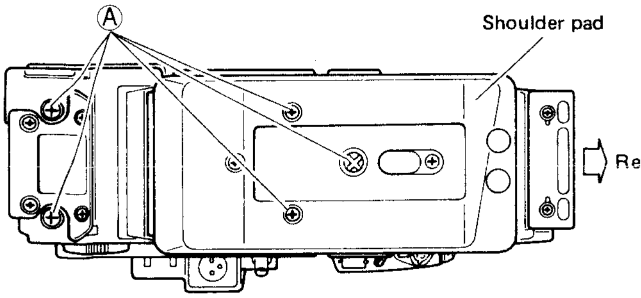
The following describes about a case that the camera has been equipped with the camera adapter KA-20, shoulder pad KA-220 and carrying handle KA-231.

Camera Adapter Separation

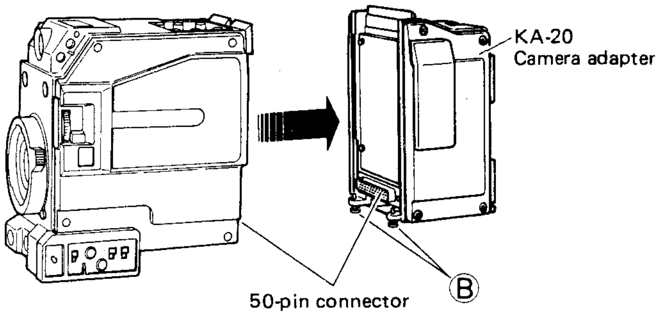
1. Detach the carrying handle from the camera by removing four screws retaining it.


Screw (4 pcs)
KA-231
Carrying handle
KA-20
Camera adapter
Camera head
KA-220
Shoulder pad

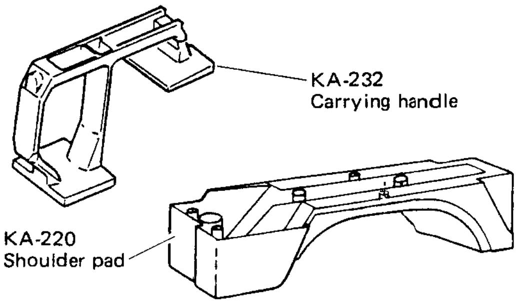
2. The following illustrates the bottom view of the shoulder pad attached to the camera. Loosen five screws Ⓐ by turning them counterclockwise and detach the shoulder pad.


Ⓐ
Shoulder pad
Rear

3. Loosen two screws Ⓑ retaining the camera adapter to the camera head on the bottom by turning them counter-clockwise, and separate the camera adapter from the camera head.


KA-20
Camera adapter
50-pin connector
Ⓑ

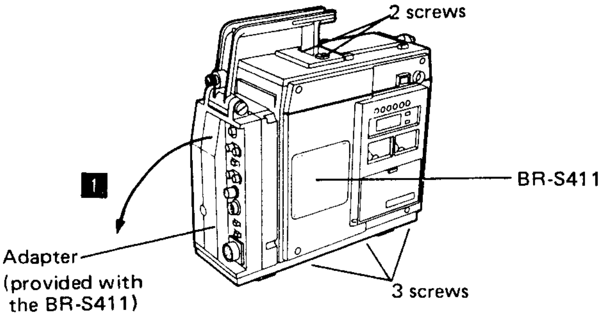
4. Attach the shoulder pad in the reverse order of the step 2.


KA-232
Carrying handle
KA-220
Shoulder pad

INSTALLATION

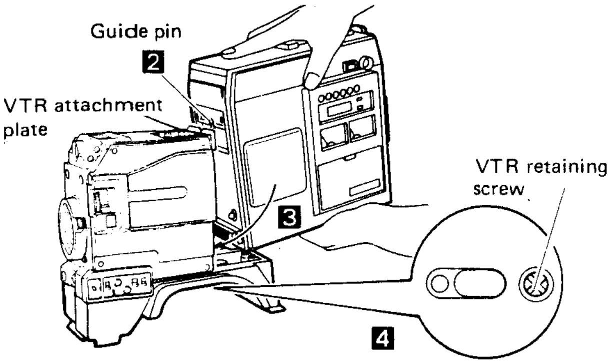
Mounting the S-VHS VTR (BR-S411)

1 Remove the adapter from the BR-S411.
The adapter is secured to the BR-S411 with three screws on the bottom and two screws on the handle grip on the top. To loosen these screws, use flat head and Phillips screwdrivers.

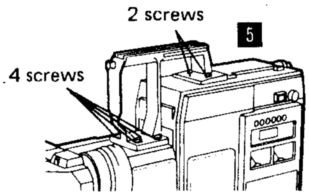


2 3 Aligning the guide pin of the BR-S411 to the V-groove on the VTR attachment plate of the camera, press the BR-S411's 50-pin connector against its counterpart on the camera.

4 After confirming that the 50-pin connections have been made correctly, secure the two units by tightening the VTR retaining screw from underneath the shoulder pad of the camera with a screwdriver.



5 Install the carrying handle (KA-232, accessory) onto the camera head and VTR using a Phillips screwdriver.

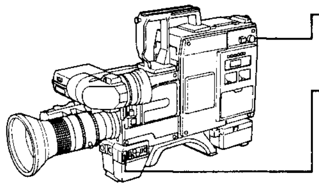


Note: Make sure to mount the VTR on the camera before attaching the carrying handle KA-232. If not, the VTR cannot be mounted.

POWER SUPPLY

- This camera is powered from the VTR via the 50-pin connector.
  Supply power to the VTR using the optional NB-G1 battery pack or the AA-P200/AA-P250 AC power adapter.
  To use the battery pack, the optional battery holder (accessory of the BR-S411) is also necessary.
  For the power supply method or connection, refer to the instruction manual of the relevant power unit or the VTR.

BASIC RECORDING PROCEDURE (with BR-S411, NB-G1)

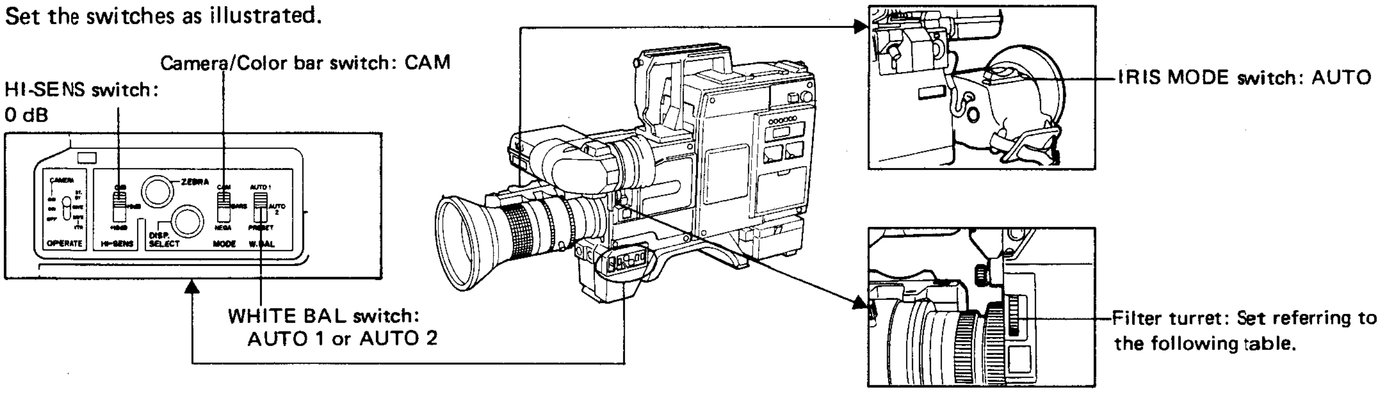


Turn the power on.

Set the OPERATION switch to "ON/ST-BY".

Insert a video cassette tape. → Refer to the instruction manual of the VTR.

Set the switches as illustrated.

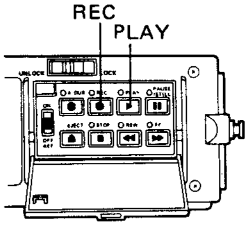

Camera/Color bar switch: CAM
HI-SENS switch: 0 dB
WHITE BAL switch: AUTO 1 or AUTO 2
IRIS MODE switch: AUTO
Filter turret: Set referring to the following table.

Filter position	Color temperatrue	Shooting conditions
1	(closed)	When not in use
2	3200K	At sunrise or sunset in a studio
3	5600K	Outdoors on cloudy or rainy days
4	5600K +25 % ND	Outdoors; bright or direct sun

VTR: STOP mode

Perform auto setup adjustment. → See page 14.

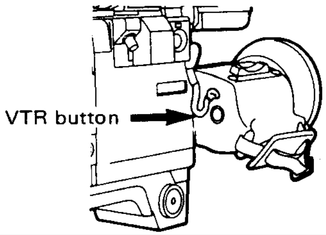
Open the cover of the operation pocket located on top of the VTR. Set the VTR to the record-pause mode by pressing the PLAY button while holding the REC button pressed.



VTR: REC PAUSE mode

→ • "STDBY" is displayed.

Press the VTR button on the lens unit. The tape will start running and recording will take place.

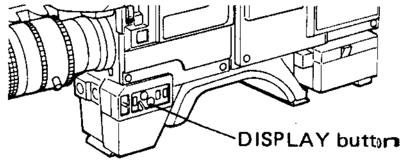


→ • "REC" is displayed.

To stop recording, press the VTR button again. The VTR will enter the record-pause mode.

Viewfinder indication

When the STATUS 1 indication is displayed in the viewfinder screen by operating the DISPLAY button, the operations of the VTR can also be checked in the viewfinder screen.


DISPLAY button

- "STDBY" is displayed.
- "REC" is displayed.

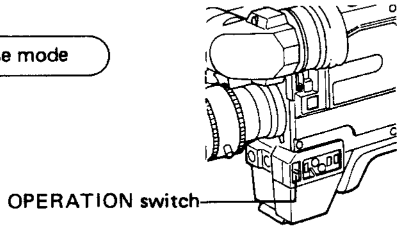
Notes:

- Linked with the viewfinder display, the REC/ALARM indicator LED (green) under the viewfinder screen goes off for STDBY and on for REC. This LED indicator functions irrespective of the setting of the DISPLAY button.

POWER SAVING OPERATIONS

Power save functions are incorporated in this system, cutting the power consumption of either the VTR or both the VTR and camera while in the record-pause mode. To save power, after the record-pause mode is engaged, proceed as follows:

Record-pause mode


OPERATION switch

Set the camera's OPERATION switch to "ON/SAVE". This switches the VTR power off while remaining in the record-pause mode, with the camera power still on. (Viewfinder is on.)

Power saving on VTR

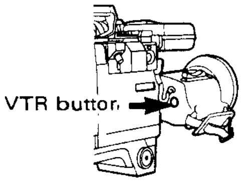
Set the camera's OPERATION switch to "OFF/SAVE". This switches the VTR and camera power off while remaining in the record-pause mode. (Viewfinder is off.)

Power saving on VTR and camera

To restart recording, set the OPERATION switch to "ON/ST-BY". Both the VTR and camera are powered and the VTR enters the record-pause mode. (Viewfinder turns on.)

Releasing the power save function

Press the VTR button on the lens unit to start shooting.



Note:

If the VTR's OPERATION button is pressed in the power save mode, the VTR is turned on and enters the stop mode automatically from the record-pause mode. Recording cannot be restarted by the above-mentioned procedure from this mode. If this happens, first set the VTR to the record-pause mode.

ENDING RECORDING

To end recording, proceed as follows:

Record-pause mode

Open the cover of the operation pocket on top of the VTR and press the STOP button.

○ STOP

Set the camera's OPERATION switch to "OFF/SAVE".

Set the VTR's POWER switch to OFF.

Note:

If the OPERATION switch is set to "OFF/SAVE" while in the record-pause mode, the power save function operates and the power of the camera and VTR is turned off while in the record-pause mode, in which the tape is still loaded around the head drum of the VTR. To avoid damaging the tape and video heads, be sure to follow the procedure described above.

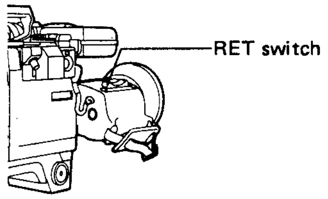
MONITORING THE PLAYBACK PICTURE

VTR: Stop mode

Press the PLAY button of the VTR.

○ PLAY

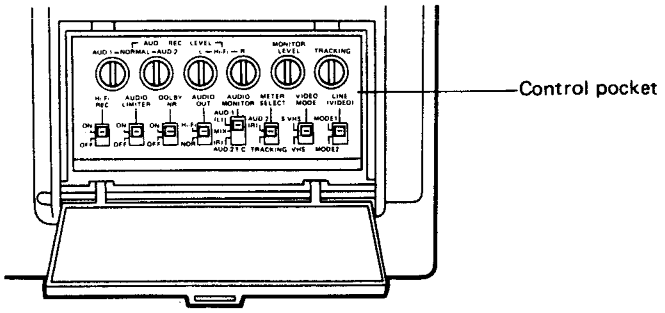
Press the RET switch on the lens unit; the playback picture can be monitored on the viewfinder screen.



To stop playback, press the STOP button of the VTR.

AUDIO OPERATION AND LEVEL CONTROL

All controls related to audio recording are located in the control pocket of the VTR. For operations of these controls refer to the instruction manual of the VTR.


AUD REC LEVEL
AUD 1 ← NORMAL → AUD 2
L ← Hi-Fi → R
MONITOR LEVEL
TRACKING
Hi-Fi REC
AUDIO LIMITER
DOLBY NR
AUDIO OUT
AUDIO MONITOR
METER SELECT
VIDEO MODE
LINE (VIDEO)
ON
OFF
ON
OFF
ON
OFF
Hi-Fi
NOR
AUD 1 (L)
MIX
(R) AUD 2 T C
AUD 2 (R)
TRACKING
S VHS
VHS
MODE 1
MODE 2
Control pocket

WARNING INDICATION AND CHARACTER DISPLAY

Warning Indication by LEDs

See page 17.

Character Display Indication

The display indications include the STATUS indication, MODE indication and WARNING indication.
The details of indications are as follows.

Note: In the following cases, any character display indication does not appear.

- The RET switch of the lens is pressed.
- The RET switch of the camera is set to ON.
- During monitoring of playback picture (see page 23)

1 STATUS indication

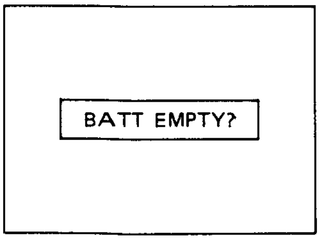
"STATUS 1" and "STATUS 2" indications (see page 17).

2 MODE indication

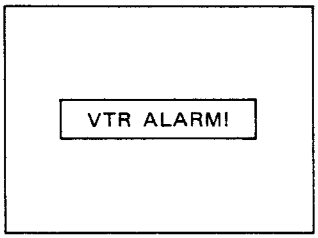
The execution mode during the auto setup adjustment will be indicated.
When the auto setup button is pressed, if the status indication is displayed, it will disappear, and be replaced by the mode indication.
Upon completion of the auto setup operation, the results will be indicated for about 4 seconds, then the original status indication will be resumed.
For the details of the execution mode indication, refer to "auto setup adjustment" on page 14.

3 Warning display

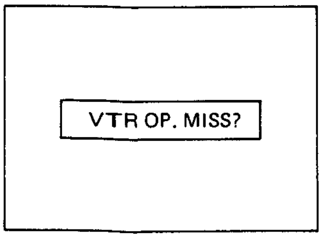
When the VTR or camera malfunctions, the display indicates the type of malfunction. This warning display has priority over other indications (STATUS or MODE). The following five indications are given.



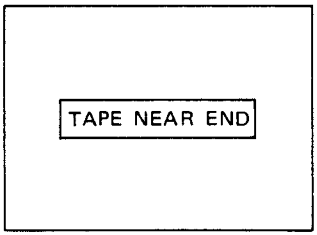
①



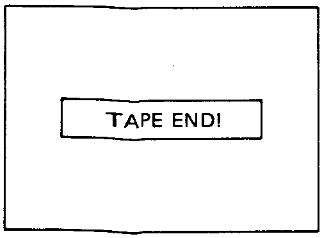
②



③



④



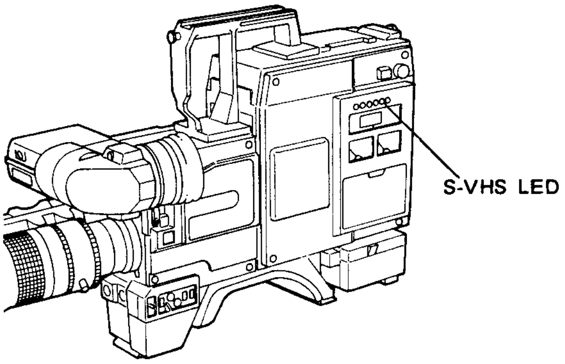
⑤

① BATT EMPTY? :
This display appears when the battery is becoming low. As soon as possible after this display appears, replace the battery with a charged one.

② VTR ALARM! :
This display appears when there is an abnormality in tape running or when moisture has condensed on the head drum.

③ VTR OP. MISS? :
This display appears when the VTR is not recording properly after the VTR button on the front panel or lens unit of the camera has been pressed. Possible causes for this are as follows (check each possible cause).

- A regular VHS cassette is inserted in the S-VHS mode. Check the cassette tape. The S-VHS LED will blink in this case.



- The VTR has not been engaged in the record-pause mode.
  First set the VTR to the record-pause mode.
- The STOP button on the VTR was pressed, instead of the VTR button on the camera, during recording.

④ TAPE NEAR END :
This display appears during recording when the remaining tape length is less than three minutes. To continue recording, a new tape should be inserted.

⑤ TAPE END! :
This display appears when the tape is coming to an end during recording. With this indication, the VTR automatically enters the stop mode, warning that recording is possible only with a new tape.

TROUBLESHOOTING

- Auto setup or auto white balance adjustments cannot be completed.
  - Is the filter turret correctly set?
  - Is the subject you are shooting a colored object?
- Auto setup or auto white balance adjustment cannot be performed.
  No display appears in the viewfinder screen.
  - Are you pressing the RET button on the lens?
  - Is the camera's RET switch set to ON?
  - Are you monitoring the VTR playback picture?
- Viewfinder screen is darker, or no raster appears.
  Scenes being shot are not visible in the viewfinder.
  - Are the viewfinder's contrast and brightness controls set properly.
  - Is the filter turrent correctly set? Is the lens iris colosed?
  - Is the camera's RET switch set to ON?

SPECIFICATIONS (U version)

Color Video Camera KY-17FIT

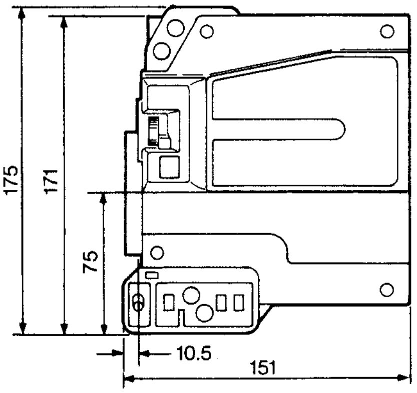
● Camera head

Image pickup device : 1/2-inch frame interline CCD x 3 (R, G, B)
Color separation optical system : 3-color separation prism
Effective number of pixels : 726(H) x 492(V), 360,000 pixels
Color system : NTSC (R-Y, B-Y method encoder)
Synchronizing system : Internal (built-in SSG) (Conforming to RS-170A)
Lens mount : 1/2" bayonet
Optical filter : 3200 K, 5600 K, 5600 K + 25% ND
Sensitivity : F5, 2000 lux
Practical minimum illumination : F1.4, 20 lux (+18 dB)
Sensitivity selection : +9 dB, +18 dB
S/N ratio (standard) : 60 dB typical (contour correction: OFF, gamma: 1, bandwidth: 4.2 MHz, Matrix: OFF)
Horizontal resolution : Typical 700 TV lines (Y channel) 540 TV lines (each R, G and B channel signal)
Registration (except lens distortion)
Zone 1 : 0.05% or less (circle 80% of picture height)
Zone 2 : 0.05% or less (circle of picture width)
Zone 3 : 0.05% or less (zone outside the above)
Contour correction : Horizontal : dual-edged
Vertical : 2H (with comb filter)

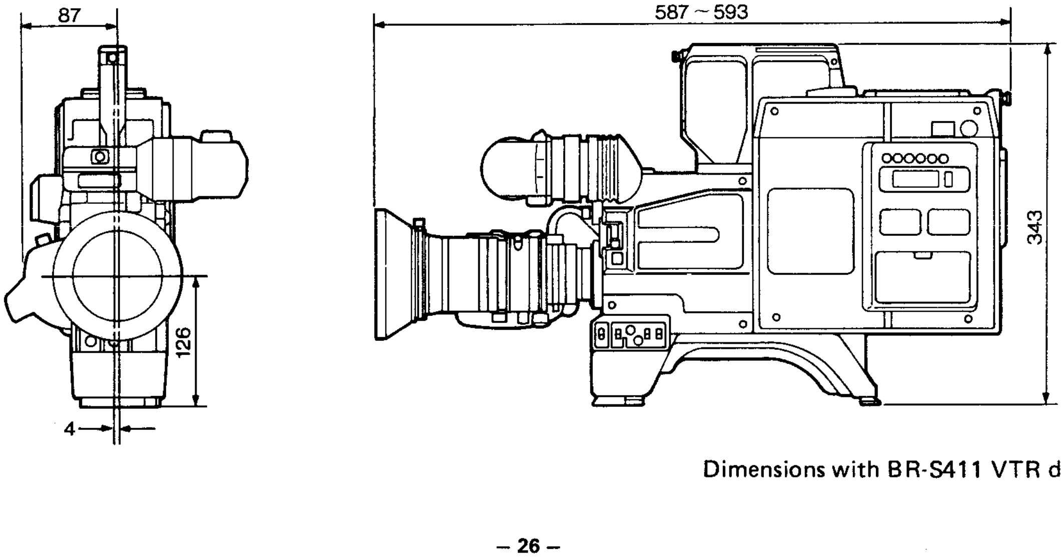
Video signal output
50-pin connector : Composite video signal (VBS)=1Vp-p
Separate Y/C signals (compatible with S-VHS)
Component signals (Y/R-Y/B-Y for MII or R/G/B ... 0.7 Vp-p, 75 Ω)
(Switchable by VTR)
Test output terminal: Composite video signal (VBS)=1Vp-p
Audio signal output
50-pin connector : Monaural/stereo output
Mic. input signal : 6P/XLR-3, −52 dBm, 600 ohms (balanced when low signal is output and unbalanced when high signal is output)
Electronic shutter speed : 1/60 (normal) and 1/100, 1/250, 1/500, 1/1000, 1/2000 selectable
Power source : 12 V DC (10.5 to 15 V) (supplied through 50-pin connector)
Current consumption : 1.2 A (camera head only)
Operating temperature range : −5°C to +45°C
Weight : 1.7 kg (camera head only)

Design and specifications are subject to change without notice.

● Dimensions (unit: mm)



Camera head only
(Dockable with BR-S411 VTR)



Dimensions with BR-S411 VTR dockable

SPECIFICATIONS (E version)

Color Video Camera KY-17FIT

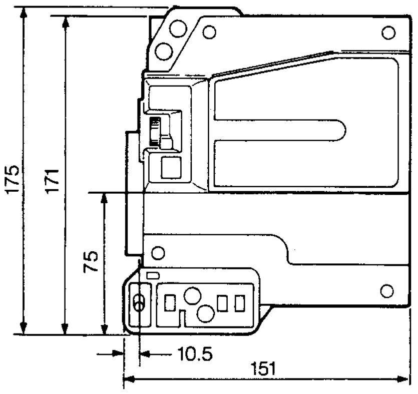
- **Camera head**

Image pickup device : 1/2-inch frame interline CCD x 3 (R, G, B)
Color separation optical system : 3-color separation prism
Effective number of pixels : 716(H) x 582(V), 420,000 pixels
Color system PAL (R-Y, B-Y method encoder)
Synchronizing system : Internal (built-in SSG)
Lens mount : 1/2" bayonet
Optical filter : 3200 K, 5600 K, 5600 K + 25% ND
Sensitivity : F5, 2000 lux
Practical minimum illumination : F1.4, 20 lux (+18 dB)
Sensitivity selection : +9 dB, +18 dB
S/N ratio (standard) : 58 dB typical (contour correction: OFF, gamma: 1, bandwidth: 5.0 MHz, Matrix: OFF)
Horizontal resolution : Typical 700 TV lines (Y channel) 540 TV lines (each R, G and B channel signal)
Registration (except lens distortion)
Zone 1 : 0.05% or less (circle 80% of picture height)
Zone 2 : 0.05% or less (circle of picture width)
Zone 3 : 0.05% or less (zone outside the above)
Contour correction : Horizontal : dual-edged
Vertical : 2H (with comb filter)

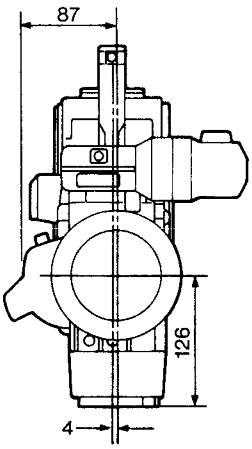
Video signal output
50-pin connector : Composite video signal (VBS)=1Vp-p
Separate Y/C signals (compatible with S-VHS)
Component signals (Y/R-Y/B-Y for MII or R/G/B ... 0.7 Vp-p, 75 Ω)
(Switchable by VTR)
Test output terminal: Composite video signal (VBS)=1Vp-p
Audio signal output
50-pin connector : Monaural/stereo output
Mic. input signal : 6P/XLR-3, –52 dBm, 600 ohms (balanced when low signal is output and unbalanced when high signal is output)
Electronic shutter speed : 1/50 (normal) and 1/120, 1/500, 1/500, 1/1000, 1/2000 selectable
Power source : 12 V DC (10.5 to 15 V) (supplied through 50-pin connector)
Current consumption : 1.2 A (camera head only)
Operating temperature range : –5°C to +45°C
Weight : 1.7 kg (camera head only)

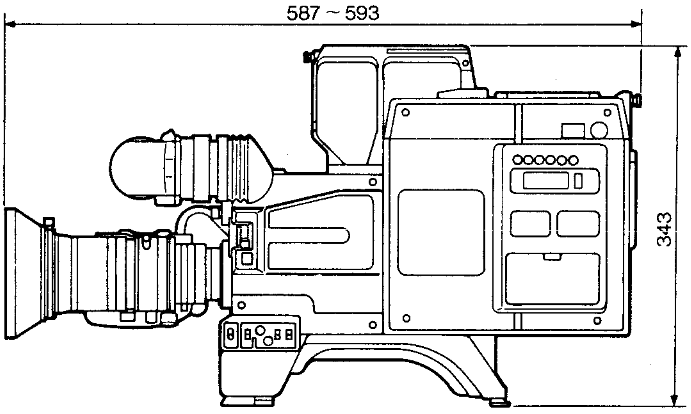
Design and specifications are subject to change without notice.

- **Dimensions** (unit: mm)



Camera head only
(Dockable with BR-S411 VTR)

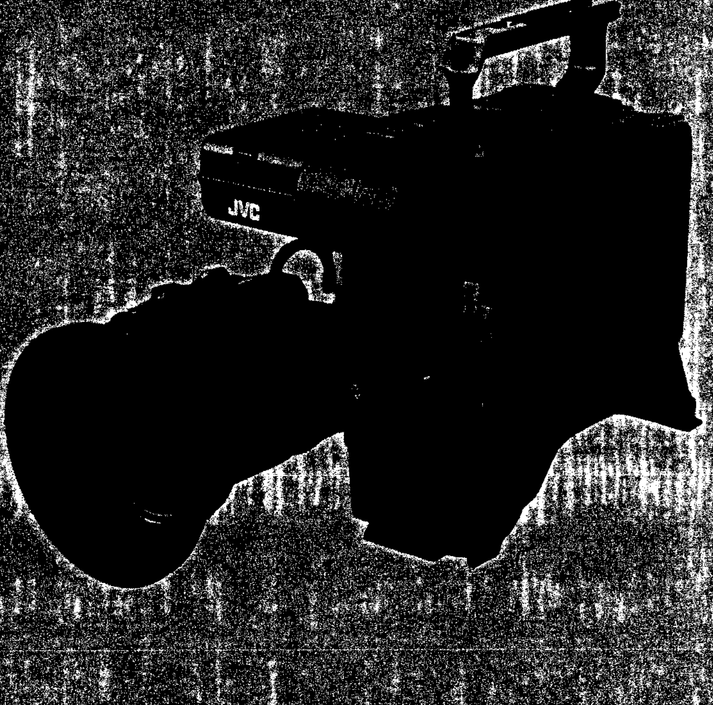




Dimensions with BR-S411 VTR dockable

No. 60056

JVC Service Manual



MODEL KY-17FIT

TABLE OF CONTENTS

Section Title Page

Important Safety Precautions

1. DIFFERENCE FROM THE BASIC MODEL (KY-17) 1 - 1

2. DISASSEMBLY 2 - 1

3. ADJUSTMENT PROCEDURE 3 - 1

4. REPACKINGS 4 - 1

5. EXPLODED VIEWS AND PARTSLIST 5 - 1

6. CHARTS AND DIAGRAMS 6 - 1

7. ELECTRICAL PARTS LIST 7 - 1

COPYRIGHT © 1991 VICTOR COMPANY OF JAPAN, LTD.

Printed in Japan

SECTION 1
DIFFERENCE FROM THE BASIC MODEL (KY-17)

1.1 MAIN DIFFERENCE IN SPECIFICATIONS

The KY-17FIT video camera is developed based on the model KY-17 with alterations mainly in the optical block. Among of improvements, change in the type of the CCD is particular, namely, the 1/2" FIT is employed in the KY-17FIT to reduce smear replacing the 1/2" IT used in the KY-17.

Table 1-1 Main difference between KY-17FIT and KY-17

(NTSC)

Item	KY-17FIT	KY-17
Pickup device (CCD)	1/2" FIT 360,000 pixels (726[H] x 492[V])	1/2" IT 330,000 pixels (670[H] x 492[V])
Horizontal resolution	Y : 700 TV lines R/G/B: 540 TV lines	Y : 640 TV lines R/G/B: 500 TV lines
Sensitivity	F5, 2000 lux	F4, 2000 lux
Standard S/N	60 dB	59 dB
Electronic shutter speed	1/100, 1/250, 1/500, 1/1000, 1/2000	1/250,1/500, 1/1000

(PAL)

Item	KY-17FIT	KY-17
Pickup device (CCD)	1/2" FIT 420,000 pixels (716[H] x 582[V])	1/2" IT 390,000 pixels (683[H] x 582[V])
Horizontal resolution	Y : 700 TV lines R/G/B: 540 TV lines	Y : 640 TV lines R/G/B: 500 TV lines
Sensitivity	F5, 2000 lux	F4, 2000 lux
Standard S/N	58 dB	56 dB
Electronic shutter speed	1/120, 1/250, 1/500, 1/1000, 1/2000	1/250,1/500, 1/1000

1.2 DIFFERENCE IN OPTICAL BLOCK

There are many differences in the optical blocks of the two models such as changes in the circuit configuration, shield case, bracket, crystal low pass filter, etc., which result in non-interchangeability between the KY-17 and the KY-17FIT.

In the optical circuit of the KY-17FIT, the PA board including the preamplifier replaces the SA board that is employed in the KY-17 because the sampling circuit is included in the CCD board.

The CCD driver circuit is exclusive use for the FIT.

The frequency of the crystal low pass filter is changed to 13.5 MHz from 12.5 MHz for the KY-17.

1.3 AUTO IRIS

Alternation of the NAM detection circuit on the CP board improves flatten image in white portion occurring in the auto iris operation.

In concrete, the improvement is done in four points of the following.

1. The time constant of peak holding is set longer.
2. The pre-filter for sampling is changed to be more optimized.
3. Detection closer to the peak point
4. Little insensitive area

1.4 PARTS CONFIGURATION DIFFERENT FROM KY-17

The following circuit boards are different from those employed in the KY-17 and they are not interchangeable with them.

- All boards in the optical block
- CP board (different in specifications of auto iris and electronic shutter)
- MT board

In addition, there is outward different in the both side covers.

SECTION 2
DISASSEMBLY

2.1 FUSE REPLACEMENT

- KY-17FIT doesn't have any fuse. When replace the fuse, refer to the VTR's service manual.

Before replacing a fuse, the reason why it blew should be investigated to prevent trouble from spreading. The malfunction should be repaired before replacing the fuse.

(1) Before replacing the fuse, set the Power switch to OFF.

(2) Fuse is built in the KA-20 camera adapter.
(3) Remove the right side cover as shown in Section 2.7.
(4) Remove the GL board, then replace the new fuse.

Note: Refer to 2.7 Removing the side cover and 2.8.1 of Removing the GL board.

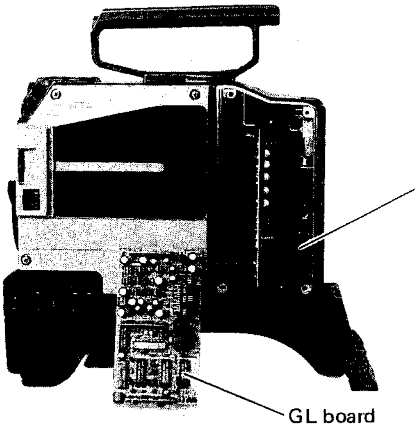


Fig. 2-1

For the protection of the camera and for your safety, replace with a fuse with the specified part number.

USA and Canada : QMF51U1-2R5; 2.5 A, 125 V
Europe : QMF51A2-2R5; T2.5 A, 250 V

2.2 REMOVAL OF CAMERA ADAPTER

(1) Remove four screws ① fixing the top handle and remove the handle.

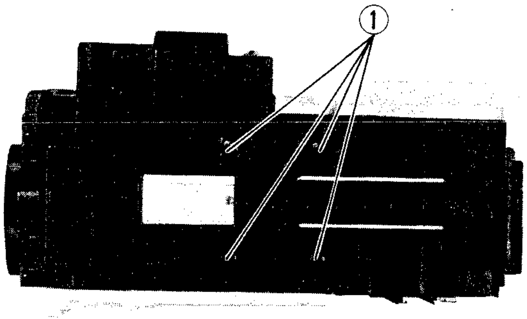


Fig. 2-2

(2) Remove five screws ② and the shoulder pad KA-220 if provided.

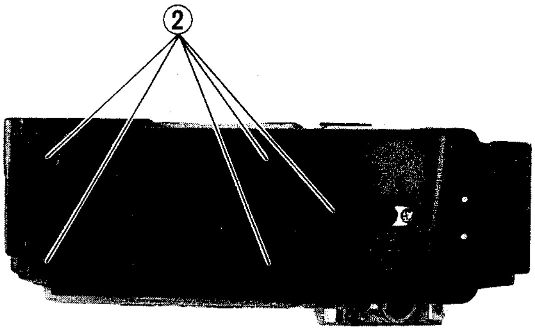


Fig. 2-3

(3) Loosen two screws ③ on the bottom. (Do not remove them.)

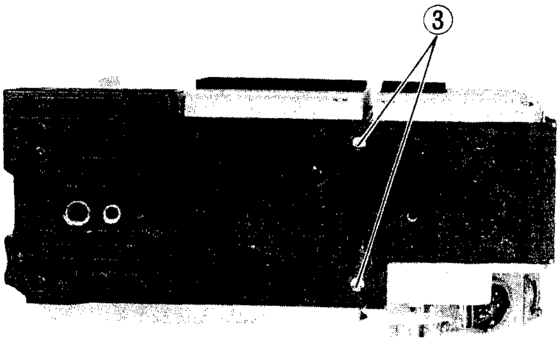


Fig. 2-4

(4) Pull the adapter backward to remove it.

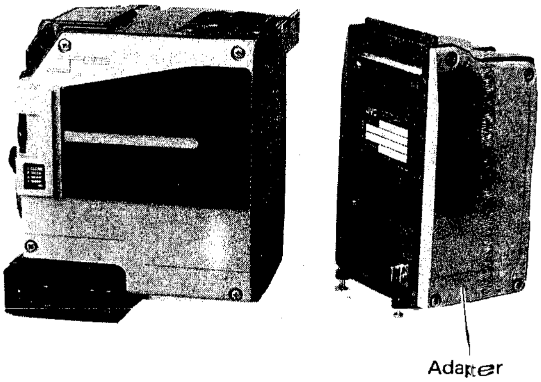


Fig. 2-5

2.3 REMOVING THE SIDE COVERS

(1) Left side cover:
Loosen four screws ④. (Do not remove them.)

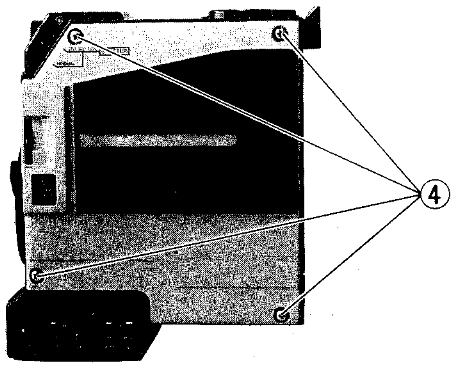


Fig. 2-6

(2) Right side cover:
Loosen four screws ⑤. (Do not remove them.)

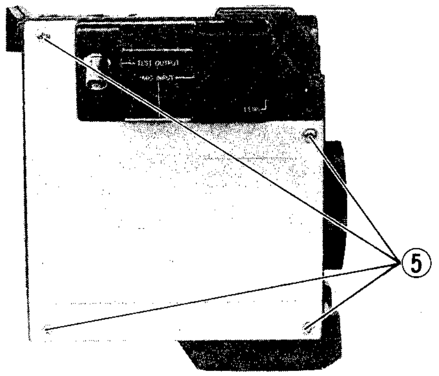


Fig. 2-7

2.4 REMOVING THE OPTICAL FILTER DISC

(1) Remove the left side cover as described in 2.3 (1).
(2) Loosen two screws ⑥. (Do not remove them)
(3) Hold the upper and lower sides of the filter holder with your fingers and pull it out.

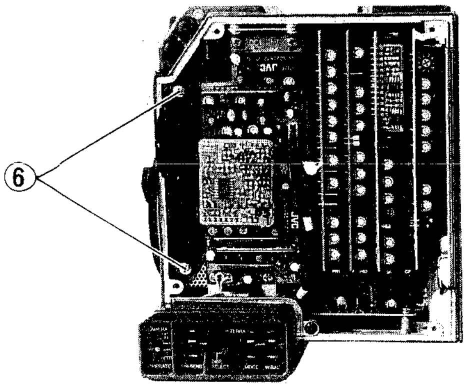


Fig. 2-8

2.5 REMOVAL OF PRINCIPAL CIRCUIT BOARDS (CAMERA HEAD)

2.5.1 Removing the plug-in circuit board

The circuit boards named PR-1, PR-2, SE and CP which are located on the bottom rail are to be removed using the board remover tool (SC41039) used for the former KY series camera.

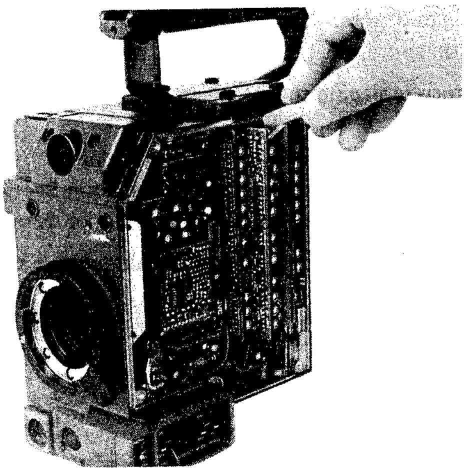


Fig. 2-9

2.5.2 Removing the CC board

Remove four screws ⑦ and take out the CC board.

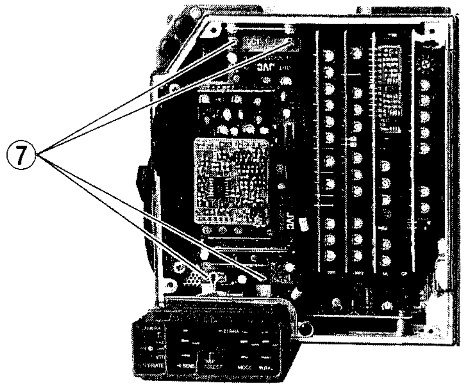


Fig. 2-10

2.5.3 Removing the PP board

(1) Remove two screws ⑧.

(2) Remove a connector Ⓐ and slide the PP board toward right (⇨) to remove.

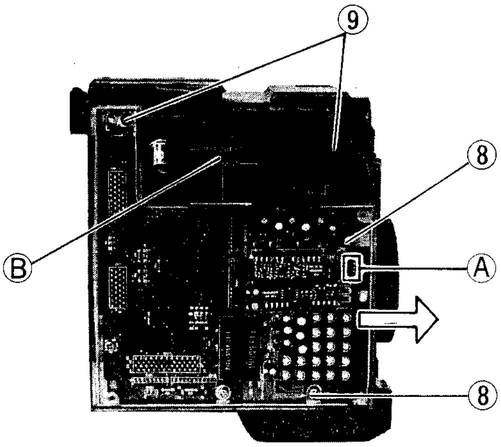


Fig. 2-11

2.5.4 Removing the AU board

(1) Remove two screws ⑨ which secure microphone amp block Ⓑ on the frame. (refer to Fig. 2-11)

(2) Remove a connector Ⓑ' and take off the block.

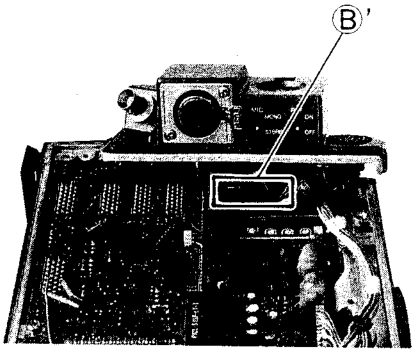


Fig. 2-12

(3) Remove two screws ⑩ on the block, then, remove the AU board.

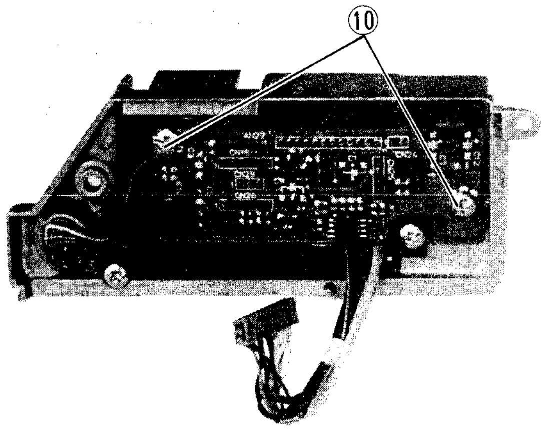


Fig. 2-13

2.5.5 Removing the MT board

(1) Remove the Plug-in boards and microphone amp block. (Refer to Section 2.5.4 (1), (2).)

(2) Remove the PP board. (Refer to Section 2.5.3.)

(3) Remove four screws ⑪ on the MT board.

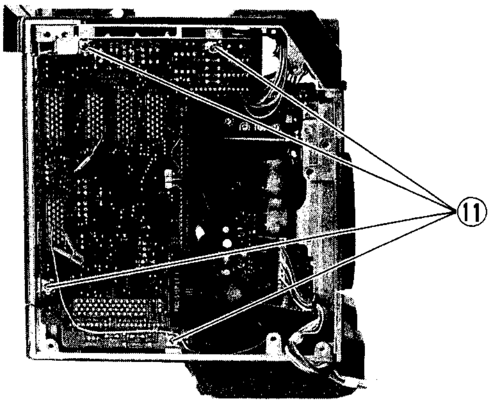


Fig. 2-14

(4) Remove a screw ⑪ ' and take out the slide rail Ⓒ .

(5) Remove the connector CN27 Ⓓ .

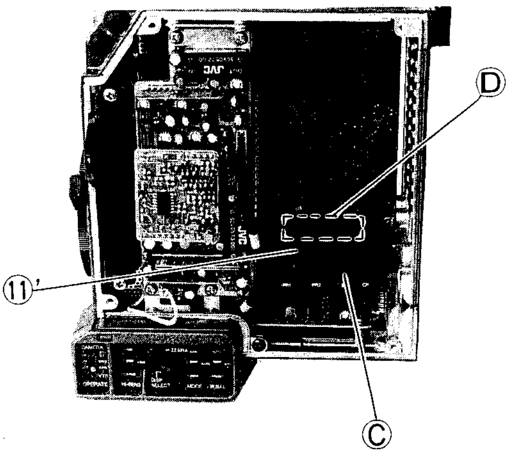


Fig. 2-15

2.5.6 Removing the PS board

(1) Remove the MT board as shown in 2.5.5.
(2) Remove a screw ⑫ and stud screw ⑬ .

Note: Bottom cover can be removed if the power transistor check is required.

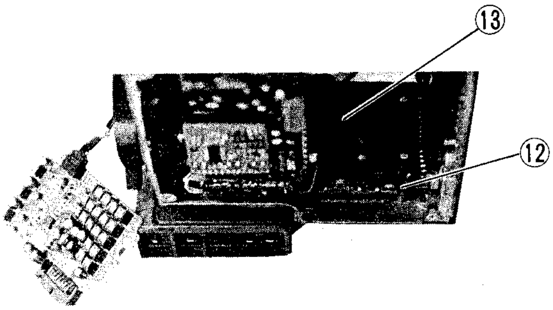


Fig. 2-16

2.5.7 Removing the SW board

(1) Remove two screws ⑭ which fixing the CC board and remove a screw ⑭ '.

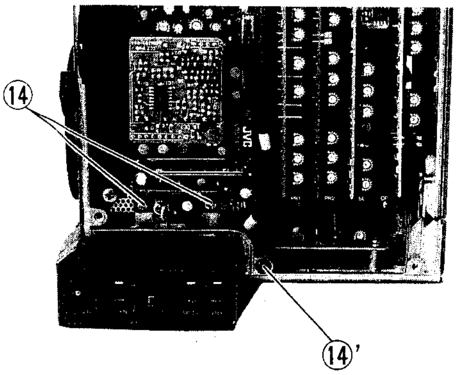


Fig. 2-17

(2) Remove a screw ⑮ on the bottom.

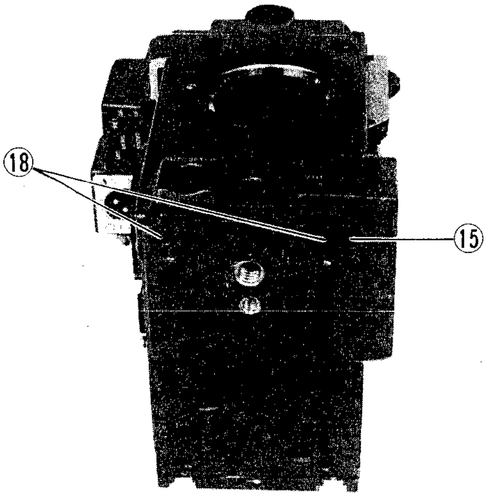


Fig. 2-18

(3) The switch panel can be pulled out together with the switch and SW board.
(4) Remove two screws ⑯.

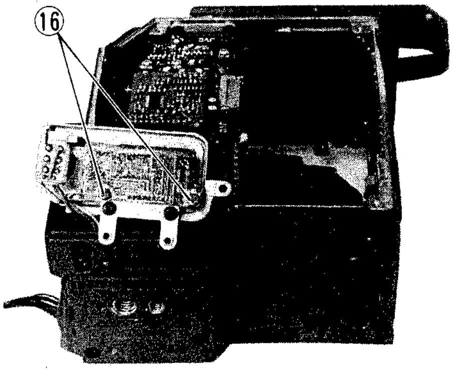


Fig. 2-19

2.6 REMOVAL OF OPTICAL BLOCK

2.6.1 Removing the optical assembly

(1) Remove top two screws ⑰ and two screws ⑱ (shown in Fig. 2-18) as the front panel is fixed on the optical block.

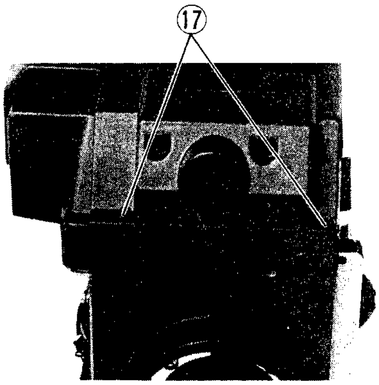


Fig. 2-20

(2) Remove a screw ⑲ and a connector Ⓙ on the PP board.

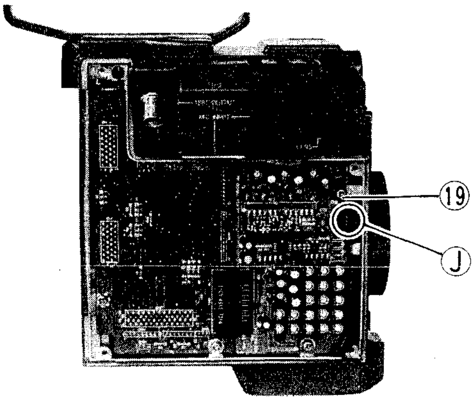


Fig. 2-21

(3) Remove the connector Ⓔ on the CC board.

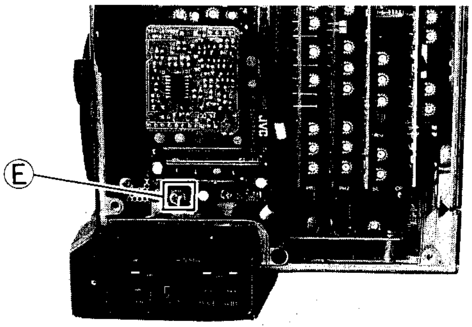


Fig. 2-22-a

(4) Remove the Plug-in boards (Rerfer to the section 2.5.1) and remove the connector Ⓔ' on the MT board.

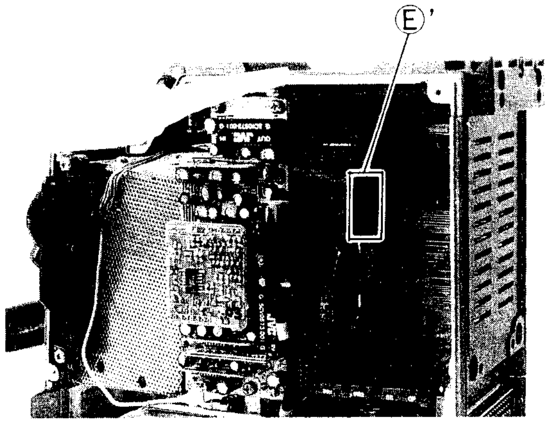


Fig. 2-22-b

(5) Take the optical block assembly out of the camera frame. Ensure the shield case may not damage the PWBs or wiring.

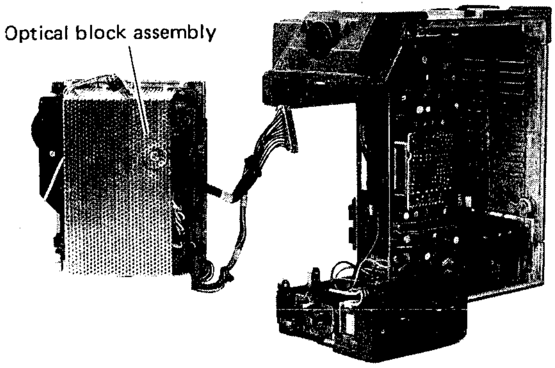


Fig. 2-23

2.6.2 Removing the image process boards

1. Removing the DRM2 board.

(1) Remove two screws ⑳ then remove the DRM2 board.

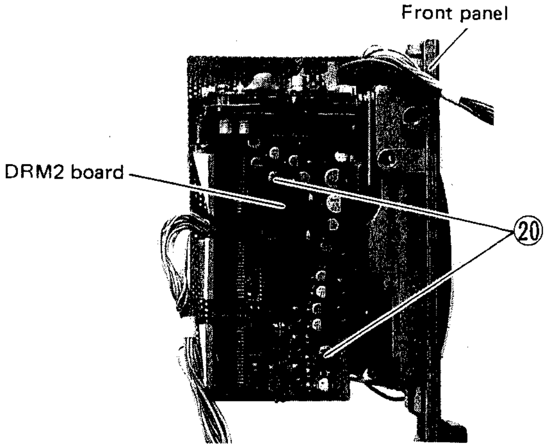


Fig. 2-24

2. Removing the PA board

(1) Remove five screws ㉑ which are fixing the shield case Ⓖ.

(2) Remove the shield case Ⓖ.

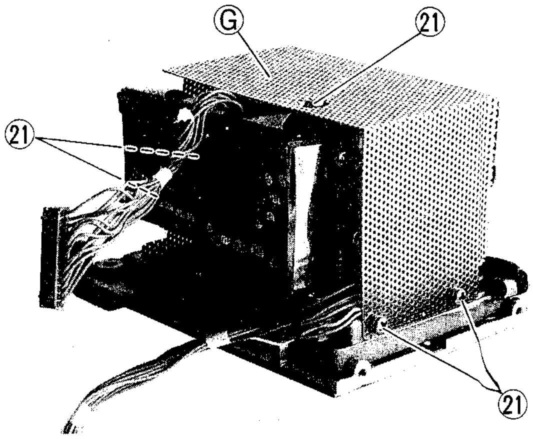


Fig. 2-25

(3) Remove two screws ㉒ on the PA board.

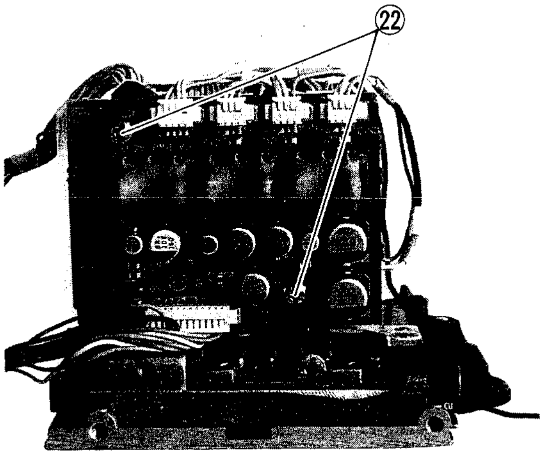


Fig. 2-26

3. Removing the DRM1 board.

(1) Remove the PA board.

(2) Remove two studs Ⓚ.

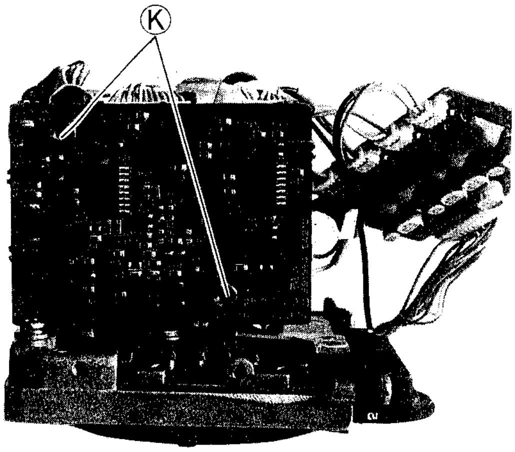


Fig. 2-26′

Note: IS boards are fixed as a combination with CCD. They could be removed from the CCDs as they are connected with socket. However, removing the IS board is not recommended to prevent connection error or unstable contact.

2.6.3 Replacing the CCD assembly

(1) Remove four screws ㉓ and the front panel Ⓗ.

Note: The CCD can not be replaced independently. Replace it with optical block assembly.

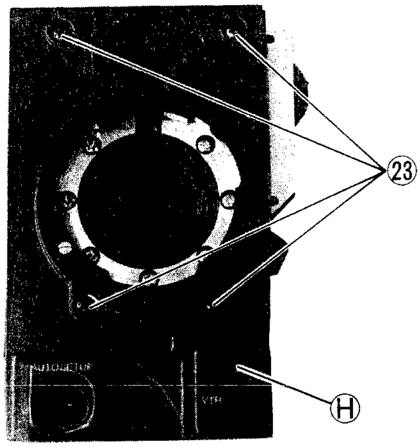


Fig. 2-27

(2) The PA, DR boards and front panel are not assembled on the replaced optical block.

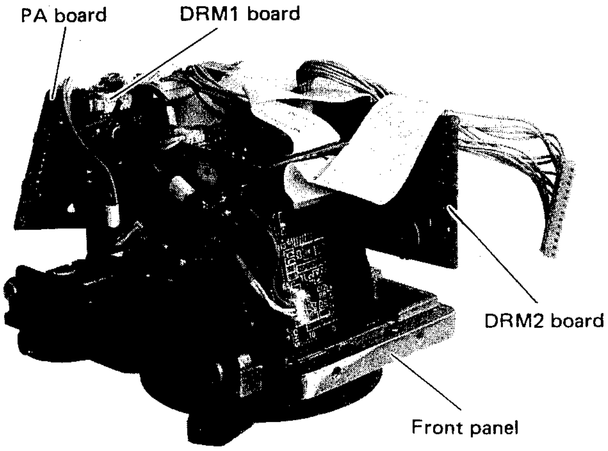


Fig. 2-28

(3) Assemble those on the new optical block removed from the former unit.

2.7 REMOVAL OF SIDE COVERS (KA-20 ADAPTER)

Loosen four screws ①. (Do not remove them.)

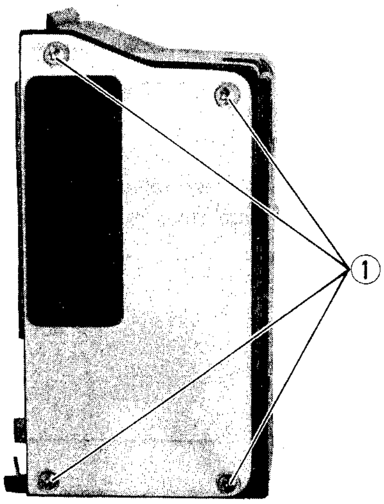


Fig. 2-29

2.8 REMOVAL OF CIRCUIT BOARDS (KA-20 ADAPTER)

2.8.1 Removing the plug-in circuit boards

Hold the board by the top and bottom, then, pull the board outward.

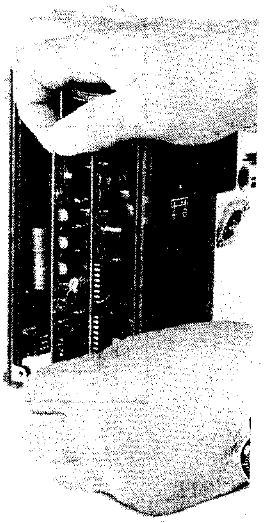


Fig. 2-30

2.8.2 Removing the MT-2 board

(1) Remove three screws ②.

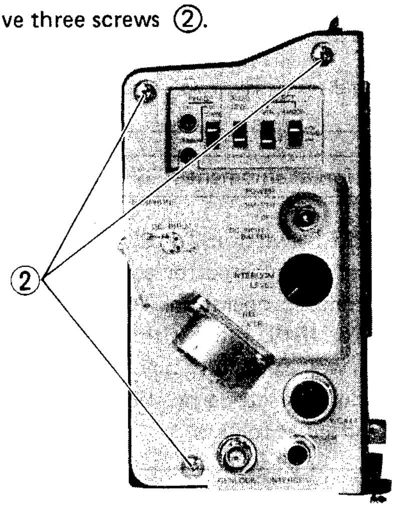


Fig. 2-31

(2) Remove the connector Ⓐ.

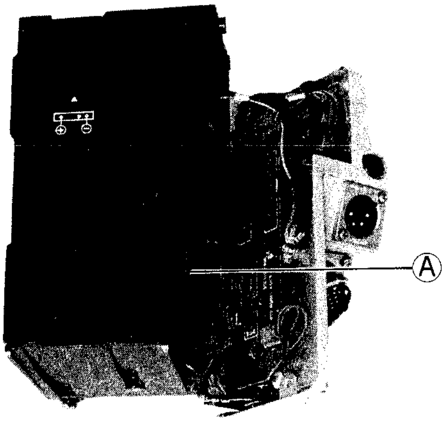


Fig. 2-32

(3) Remove two screws ③ .
Pull out the MT-2 board to access to the connectors.

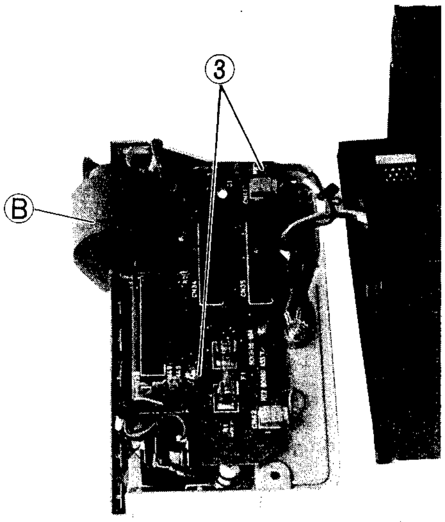


Fig. 2-33

(4) Refer to the FPC connector Ⓑ removal below.
Note for conductors side on both of card cable and connector to mate.

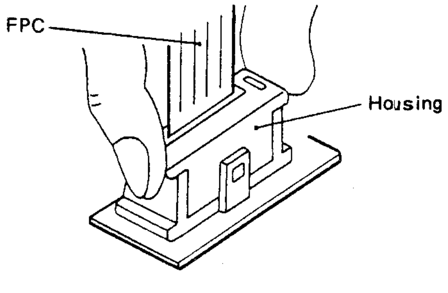


Fig. 2-34

2.8.3 Removing the CT board

(1) Remove the MT-2 board as shown in Section 2.8.1 and 2.8.2.
(2) Remove three screws ④.

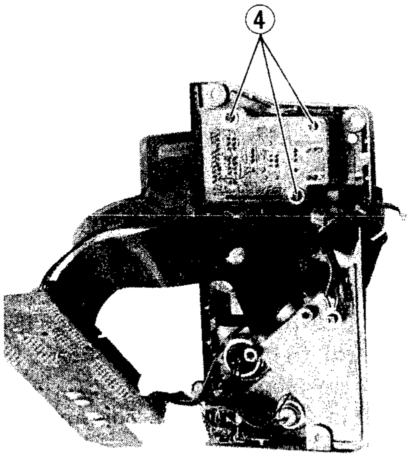
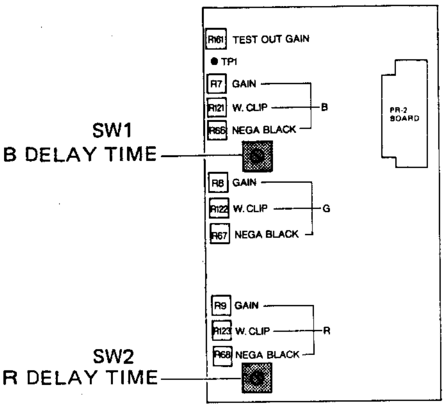


Fig. 2-35

2.9 FUNCTIONS OF SWITCHES INSIDE CAMERA

Each function of the switches built in the camera (on the PR2, SE, CP and MT boards) is as follows.

2.9.1 Switches on PR2 board


R61 TEST OUT GAIN
● TP1
R7 GAIN
R121 W.CLIP
R66 NEGA BLACK
B
PR-2 BOARD
SW1
B DELAY TIME
R8 GAIN
R122 W.CLIP
R67 NEGA BLACK
G
R9 GAIN
R123 W.CLIP
R68 NEGA BLACK
R
SW2
R DELAY TIME

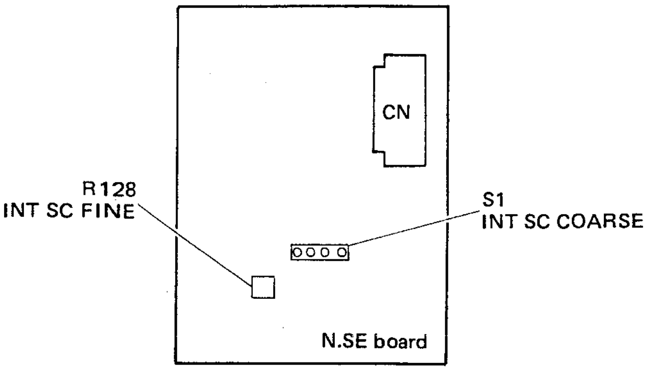
1. R/B DELAY TIME switches (SW1, SW2)
   SW1 and SW2 are adjusting switches for delay amount of R/B signal. Usually, adjustment by these switches is not required.

   - Don't touch these switches.

2. MATRIX ON/OFF switch connector (S3)
   S3 is the connector of the MATRIX ON/OFF switch.
   Ideal spectral composition includes respective negative components corresponding to R, G and B colors, however the practical spectroscopic system excludes negative components and such errors are compensated by the color matrix circuit which is activated by setting this switch to "ON".

   - Setting position at shipment : "ON"

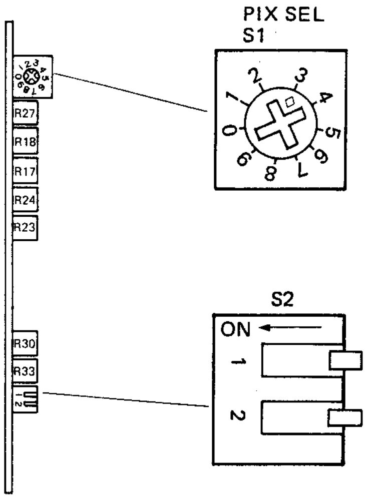
2.9.2 Switch on SE board (NTSC type only)


CN
R128
INT SC FINE
S1
INT SC COARSE
N.SE board

1. INT SC COARSE switch (S1)
   The INT SC COARSE switch (S1) and the INT SC FINE volume control (R128) on the SE board (only in the NTSC type) are prepared to adjust SC signal generated by the built-in SSG. In usual, adjustment by S1 and R128 is not required.

   - Don't touch them.

2.9.3 Switches on CP board


PIX SEL
S1
0
1
2
3
4
5
6
7
8
9
R27
R18
R17
R24
R23
S2
ON
1
2
R30
R33

Setting position of this switch is indicated by "◊" mark.

The left setting position indicated by ← is for switch ON.

1. PIX SEL switch (S1)
   This is a selector switch of signals to be outputted to the TEST OUTPUT connector and to the viewfinder.
   According to the setting position of this switch, output signal is selected as follows.

Setting position	0	1	2	3	4–9
Output signal	R	G	B	ENC (composite)	None

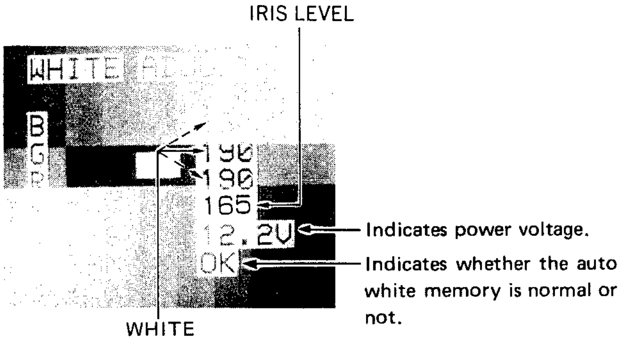
- Setting position at shipment : "3"

2. CHECK switch/CC switch (S2-1, S2-2)
   These switches are prepared for adjustments and check-up of the automatic operation (AUTO WHITE, AUTO BLACK, AUTO IRIS, etc.) with the CPU set to the check mode as well as for turning on/off the contour collector. According to setting positions of these switches, the mode is shifted as follows.

	Switch position		Mode	
	1 (upper)	2 (lower)		
①	OFF	ON	Normal mode	Contour "ON"
	OFF	OFF		Contour "OFF"
②	ON	OFF	Check mode	for adjusting AUTO WHITE/IRIS
③	ON	ON		for adjusting AUTO BLACK

① Normal mode (Switch "1" is OFF)
By turning ON/OFF the switch "2", the contour collector can be turned on/off.

② AUTO WHITE/AUTO IRIS adjusting/check mode
Indication in the viewfinder is as shown below.
In practical adjustment, refer to the Section 3 "Electrical Adjustment".



IRIS LEVEL

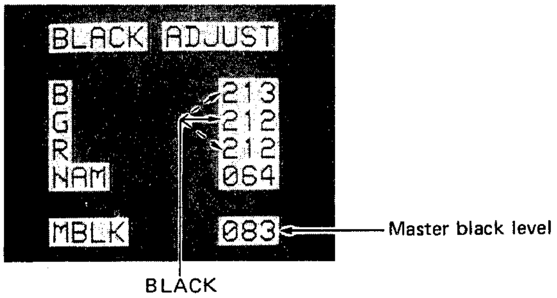
Indicates power voltage.

Indicates whether the auto white memory is normal or not.

WHITE

* Respective values of B, G, R and NAM don't indicate voltage but are mere indexes for convenience.

③ AUTO BLACK adjusting/check mode
Indication in the viewfinder is as follows.
In practical adjustment, refer to the Section 3 "Electrical Adjustment".



Master black level

BLACK

* Respective values don't indicate voltage but are mere indexes for convenience of the CPU.

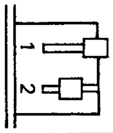
Notes:

In the check mode, the camera comes in the following condition.

1) When the IRIS MODE switch of the lens is set to "AUTO", the iris is fixed (around f 5.6).
2) AUTO SETUP and AUTO WHITE BALANCE adjustments are impossible.
3) Display in the viewfinder is for the check mode, and it cannot be changed to another display by the DISP. SELECT switch.
4) During the black adjustment mode (1:ON, 2:ON) the BLACK SLICE is turned OFF. Setting the switch "1" to OFF returns the mode to the normal, but the BLACK SLICE is not turned ON. To activate (to turn on) the BLACK SLICE again in this case, it is the only way to turn off the power switch once and turn it on again.

If the switch "1" is once turned ON (to set to the check mode), contents of the auto white balance memory (AUTO 1, AUTO 2) are erased and the color temperature is initialized to the preset value even after the switch "1" is turned OFF (to set to the normal mode).

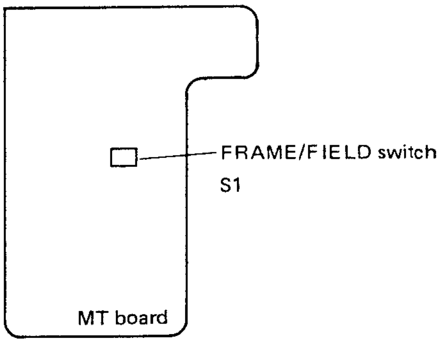
- Setting position at shipment
(Normal mode, Contour ON)



Switch "1" : OFF

Switch "2" : ON

2.9.4 Switch on MT board



1. FRAME/FIELD READOUT SELECTOR switch (S1)
To select reading mode of signal from the CCD.
Position "1" : For FRAME READOUT mode
Used to pick up still objects. In this mode the vertical resolution of the camera is improved.
Position "2" : For FIELD READOUT mode
Used to pickup moving pictures.

- Setting position at shipment : Position "2"

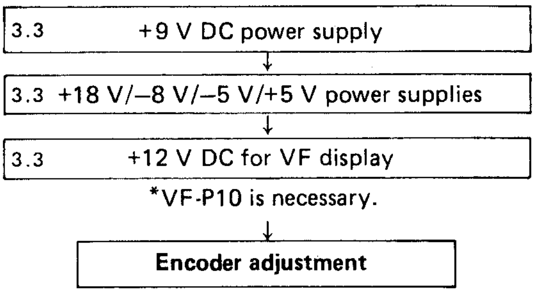
2.9.5 Function of switches built in adapter

For these switches, refer to the item 1 "Circuit Description" of the "Camera Adapter KA-20" to be described later.

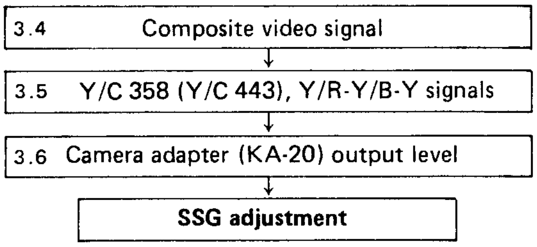
SECTION 3
ELECTRICAL ADJUSTMENT

3.1 FLOWCHART OF ELECTRICAL ADJUSTMENT

1. Adjustment and checkup of power supply


3.3 +9 V DC power supply
3.3 +18 V/–8 V/–5 V/+5 V power supplies
3.3 +12 V DC for VF display
*VF-P10 is necessary.
Encoder adjustment

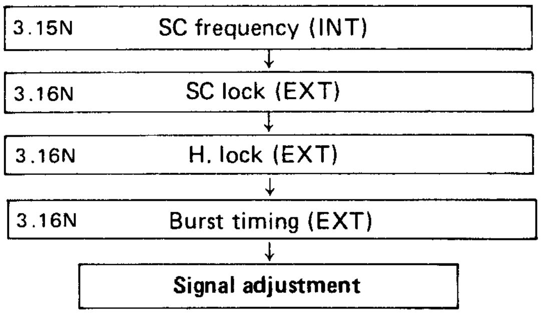
2. Encoder adjustment


3.4 Composite video signal
3.5 Y/C 358 (Y/C 443), Y/R-Y/B-Y signals
3.6 Camera adapter (KA-20) output level
SSG adjustment

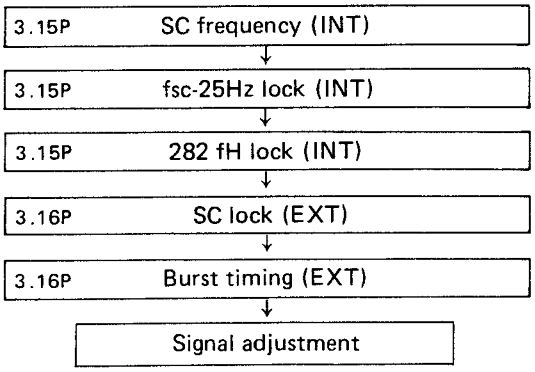
3. Adjustment of SSG (Reference signal generator)

Note: This adjustment is not required generally.
Proceed to "Signal adjustment" of the next.

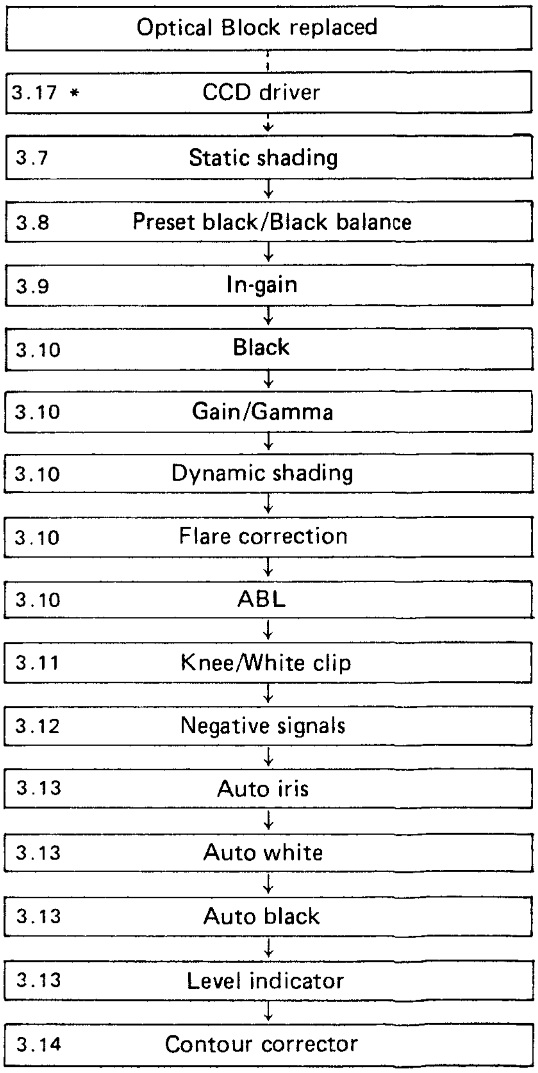
•NTSC


3.15N SC frequency (INT)
3.16N SC lock (EXT)
3.16N H. lock (EXT)
3.16N Burst timing (EXT)
Signal adjustment

•PAL


3.15P SC frequency (INT)
3.15P fsc-25Hz lock (INT)
3.15P 282 fH lock (INT)
3.16P SC lock (EXT)
3.16P Burst timing (EXT)
Signal adjustment

4. Signal adjustment


Optical Block replaced
3.17 * CCD driver
3.7 Static shading
3.8 Preset black/Black balance
3.9 In-gain
3.10 Black
3.10 Gain/Gamma
3.10 Dynamic shading
3.10 Flare correction
3.10 ABL
3.11 Knee/White clip
3.12 Negative signals
3.13 Auto iris
3.13 Auto white
3.13 Auto black
3.13 Level indicator
3.14 Contour corrector

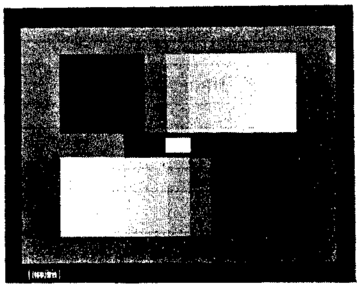
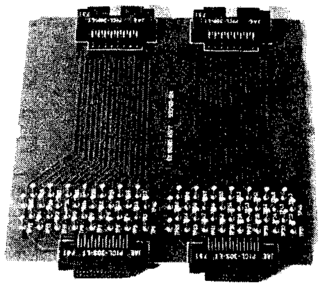
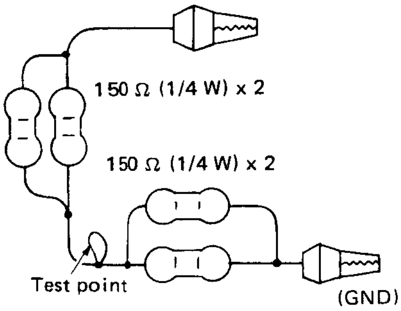
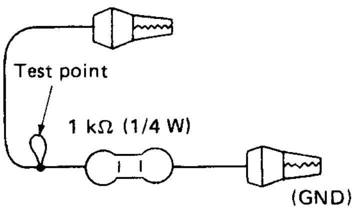
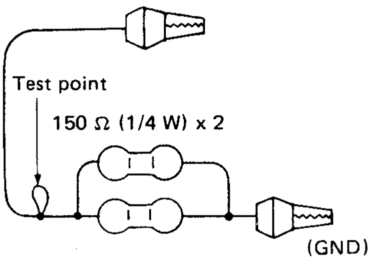
*CCD DRIVER adjustment is uneccessary at ordinary servicing. (include optical Block replacing)

3.2 REQUIRED EQUIPMENT AND STANDARD SETUP FOR ELECTRICAL ADJUSTMENT

3.2.1 Necessary equipment and instruments

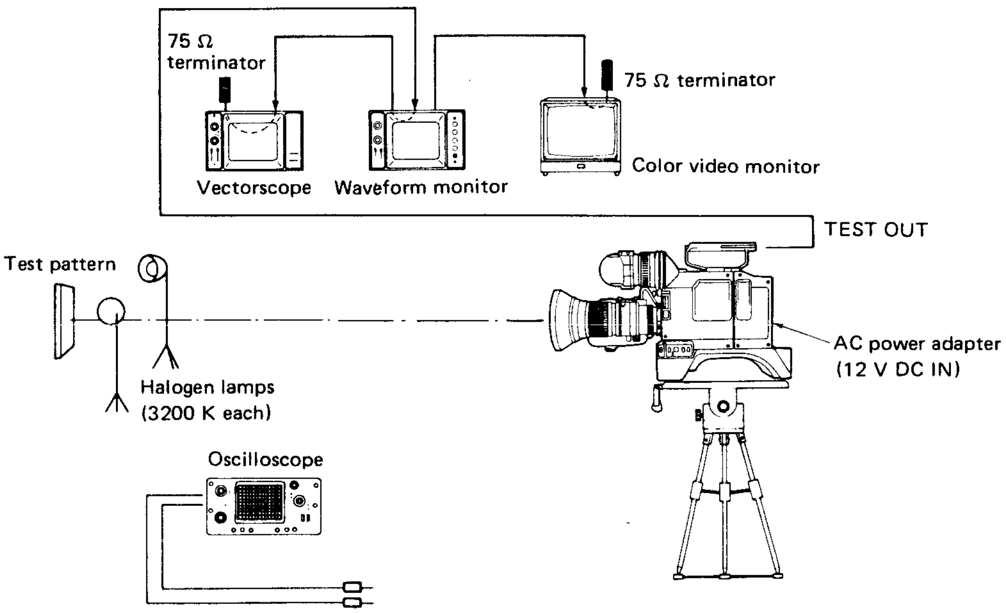
1. Lighting appliance (Halogen lamps - 3 200 K)
2. DC voltmeter (digital voltmeter is preferable)
3. Oscilloscope (dual-trace type is preferable)
4. Frequency counter
5. Color video monitor
6. Waveform monitor
7. Vectorscope
8. Tripod base (KY-17FIT accessary or KA-500X)
9. Regulated power supply : 12 V DC (AC power adapter, etc.)
10. Lens: HZ-713 or equivalent

3.2.2 Required divices and jigs

1 Grey scale chart (GS-2L)	2 Extension board 60 P (SCK2169-00A)	3 Board extracter (SC41039-001)
		
4 75Ω/75Ω terminator A	5 1 kΩ terminator	6 75 Ω terminator B
 150 Ω (1/4 W) x 2 150 Ω (1/4 W) x 2 Test point (GND)	 Test point 1 kΩ (1/4 W) (GND)	 Test point 150 Ω (1/4 W) x 2 (GND)

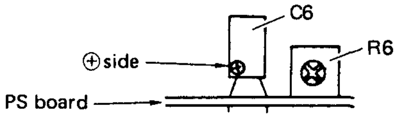
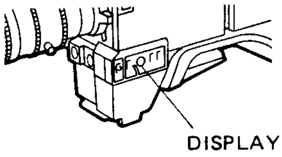
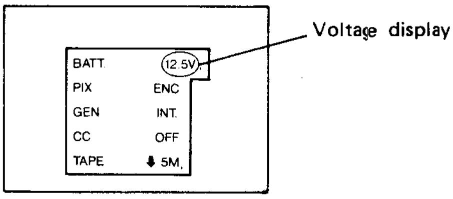
Note: Prepare the terminators (items 4, 5 and 6) by yourself.

3.2.3 Standard setup and connection


75 Ω terminator
75 Ω terminator
Vectorscope
Waveform monitor
Color video monitor
TEST OUT
Test pattern
Halogen lamps
(3200 K each)
AC power adapter
(12 V DC IN)
Oscilloscope

No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⌽) Adjustment level (☆)	Adjustment procedure

3.3 ADJUSTMENT OF POWER SUPPLY VOLTAGES

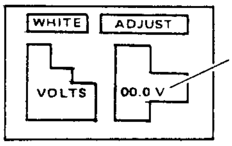
No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⌽) Adjustment level (☆)	Adjustment procedure
1	+9 V DC power supply	Digital voltmeter	◎ C6 (⊕side) [PS board] ⌽ +9 V ADJ (R6) [PS board] ☆ +9 V DC	● Adjust R6 to obtain the specified voltage.  C6 R6 ⊕side PS board
2	+18 V −8 V −5 V +5 V power supplies	Digital voltmeter	◎ AN16 pin 8 [MT board] ☆ +18 V DC ◎ AN16 pin 9 [MT board] ☆ −8.5 V DC ◎ AN16 pin 10 [MT board] ☆ −5 V DC ◎ AN16 pin 11 [MT board] ☆ +5 V DC	● Check up the specified value for every power supply of this item.
3	+12 V DC for viewfinder display	Digital voltmeter	CP board → Extension board connected ◎ TP60 [Extension board]	**Note:** Viewfinder VF-P10 is necessary for this adjustment. ● Confirm the voltage with a digital voltmeter.
			◎ Viewfinder display ⌽ 12 V DET (R33) [CP board] ☆ The 0.5 V up voltage more then TP60 voltage	1) Press the DISPLAY button to show the "STATUS 2" on the screen.  DISPLAY button  Voltage display BATT 12.5V PIX ENC GEN INT. CC OFF TAPE ⬇ 5M. 2) Adjust R37 so the 0.5 V up voltage as confirmed at TP60 is displayed on the screen.

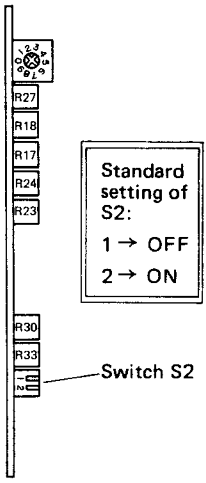
* This adjustment can be performed according to the following procedure.

1) Switch S2 on the CP board to change the mode to "WHITE ADJUST".

The switch S2
→ 1 : ON (CHECK switch)
→ 2 : OFF (CONTOUR switch)

2) In the above mode, voltage is shown on the screen under the title of "WHITE ADJUST" as shown below.


WHITE
ADJUST
VOLTS
00.0 V
Voltage displayed

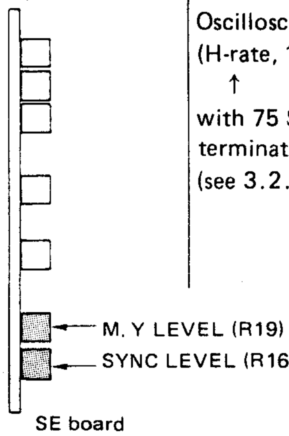
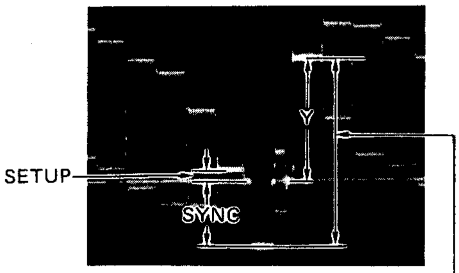
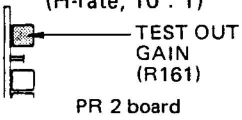
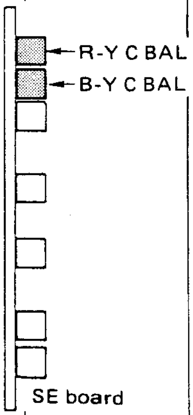
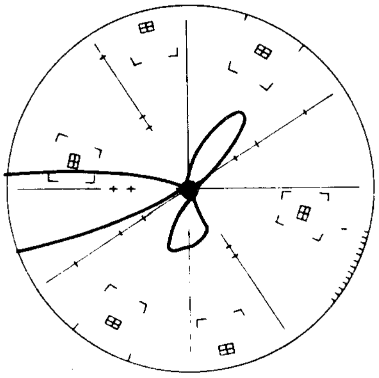
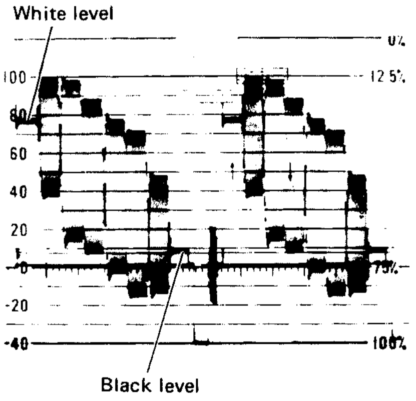

R27
R18
R17
R24
R23
Standard setting of S2:
1 → OFF
2 → ON
R30
R33
Switch S2

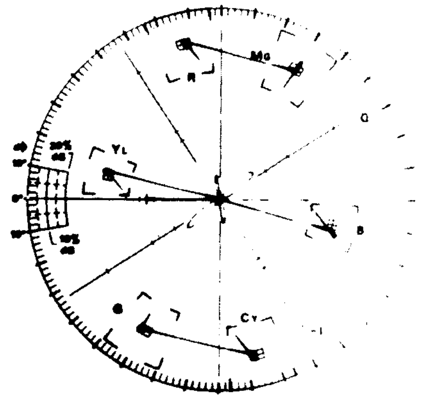
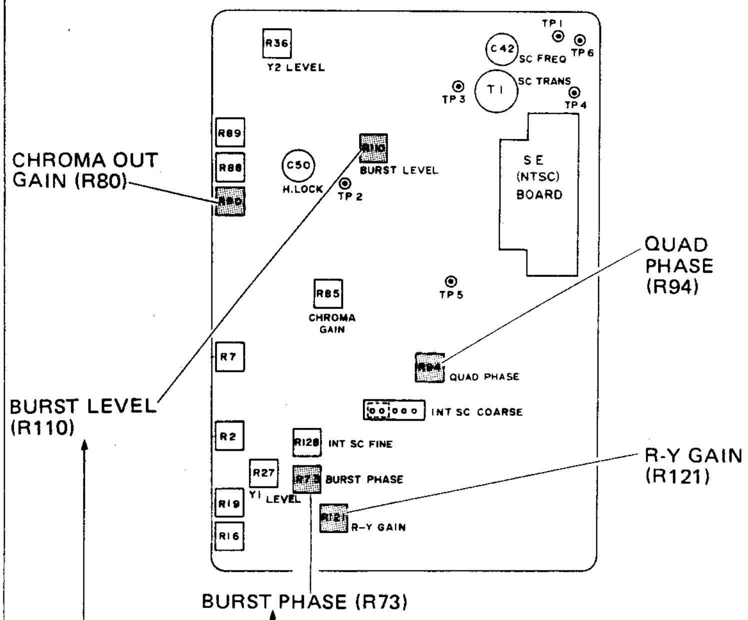
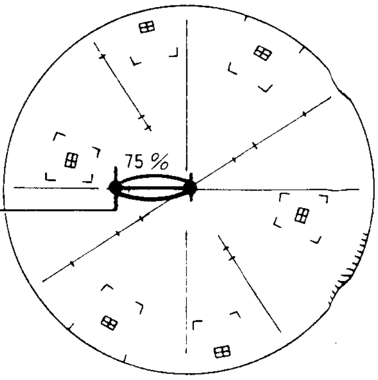
CP board

No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure

3.4-N ENCODER ADJUSTMENT - 1(Adjustment of composite signal) : NTSC

Note: If this adjustment is performed without a vectorscope, proceed the adjustment and checkup of the items only from No. 1 (Bar level adjustment) to No. 3 (Carrier balance adjustment).

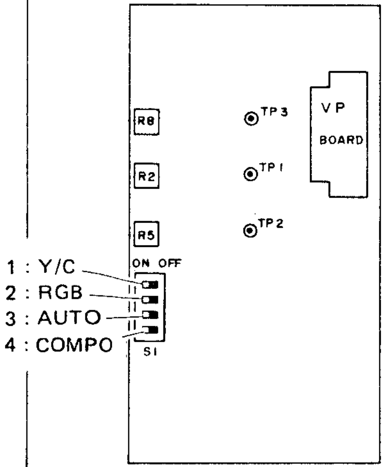
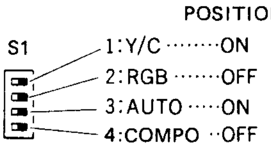
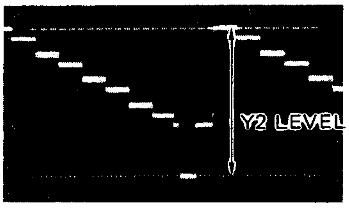
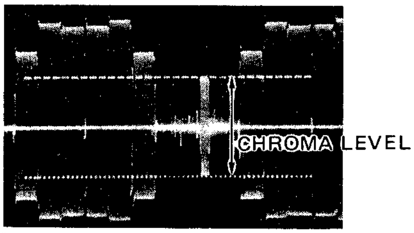
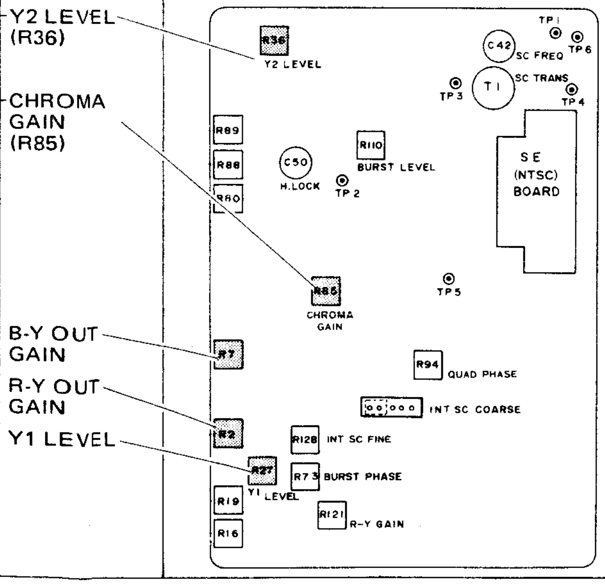
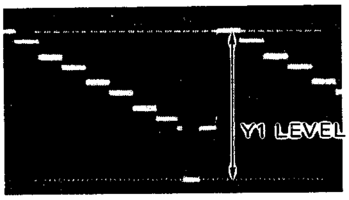
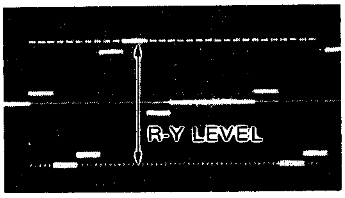
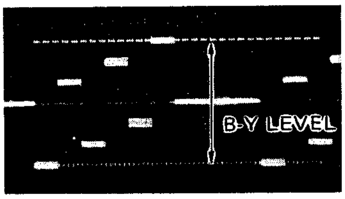
1	Bar level 	Oscilloscope (H-rate, 10 : 1) ↑ with 75 Ω/75 Ω terminator A (see 3.2.2)	SE board → Use the Extension board for it. ◎ TP6 [SE board] with 75 Ω/75Ω terminator A ⏀ MASTER Y LEVEL (R19) [SE board] ☆ 0.55 Vp-p ⏀ SET UP level (checkup only) ☆ 53 mVp-p ⏀ SYNC LEVEL (R16) [SE board] ☆ 0.286 Vp-p	**Note:** Measuring conditions: • Filter disk → 1 (closed) • CAMERA/COLOR BARs switch → BARS • PIX SELECT switch [CP board] → 3 (ENC) • Adjust for the specified values. 
2	Test output level 	Waveform monitor or Oscilloscope (H-rate, 10 : 1)	◎ TEST OUTPUT terminal (with 75 Ω termination) ⏀ TEST OUT GAIN (R161) [PR2 board] ☆ 0.835 Vp-p (level between Sync tip and Y peak)	• Set for the specified value.
3	Carrier balance 	Waveform monitor or Oscilloscope (H-rate, 10 : 1)	◎ TEST OUTPUT terminal (with 75Ω termination) ⏀ B–Y C BAL (R88) [SE board] ⏀ R–Y C BAL (R89) [SE board] ☆ Minimum carrier leak * Procedure with a vectorscope used 1) Vectorscope's GAIN → Maximum 2) Turn the C BAL VRs alternately to position the spots at the center of the screen. 	• Minimize carrier leaks of white level and black level by turning C. BAL VRs (R88 and R89) alternately. 

No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⌽) Adjustment level (☆)	Adjustment procedure
4	Chroma level, etc. ● Adjust chroma level first, then, adjust R-Y level.	Vectorscope	◎ TEST OUTPUT terminal (with 75 Ω termination) ⌽ CHROMA OUT GAIN (R80) [SE board] ⌽ R-Y GAIN (R121) [SE board]	1) GAIN of vectorscope → CAL, or 75% (preset position) 2) Adjust VRs to set every spot (R, G, B, Mg, Cy, Yl) at the specified point on the vectorscope's screen as shown below. 
5	Quadrature  R36 Y2 LEVEL TP1 TP6 C42 SC FREQ SC TRANS TP3 T1 TP4 R89 R88 R80 CHROMA OUT GAIN (R80) C50 H.LOCK R110 BURST LEVEL TP2 SE (NTSC) BOARD QUAD PHASE (R94) R85 CHROMA GAIN TP5 R7 R94 QUAD PHASE INT SC COARSE BURST LEVEL (R110) R2 R128 INT SC FINE R27 Y1 LEVEL R73 BURST PHASE R-Y GAIN (R121) R19 R121 R-Y GAIN R16 BURST PHASE (R73)		⌽ QUAD PHASE (R94) [SE board]	
6	Burst phase & level		⌽ BURST PHASE (R73) [SE board] ⌽ BURST LEVEL (R110) [SE board]	● Adjust R73 and R110 respectively for correct burst phase and burst level. 

No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure

3.5-N ENCODER ADJUSTMENT - 2 (Adjustment of Y/C 358 and Y/R-Y/B-Y signal levels) : NTSC

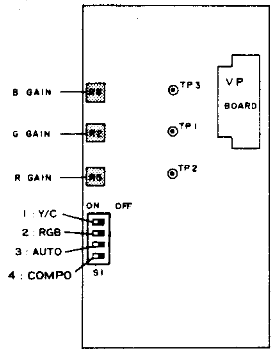
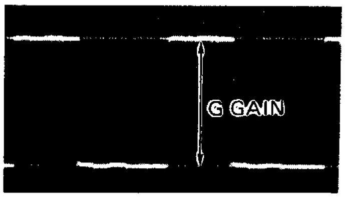
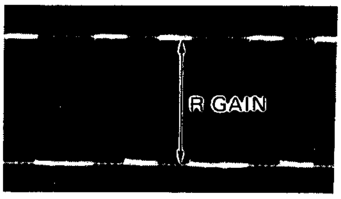
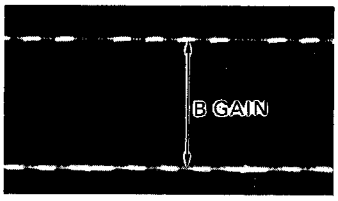
Note: The following adjustment should be performed successively after the procedure of 3.4 Encoder Adjustment - 1.

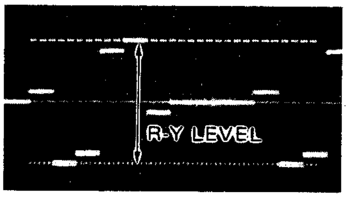
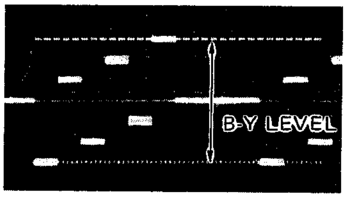
1	Y/C 358 signal level	Oscilloscope (H-rate, 10 : 1) ↑ with 1 kΩ ← terminator (see 3.2.2)  R8 TP3 VP BOARD R2 TP1 R5 TP2 ON OFF S1 1 : Y/C 2 : RGB 3 : AUTO 4 : COMPO	SE board → Use the Extension board for it. ◎ TP23 [Extension board] with 1 kΩ termination ⏀ Y2 LEVEL (R36) [SE board] ☆ 0.835 Vp-p (with sync) ◎ TP27 [Extension board] with 1 kΩ termination ⏀ CHROMA LEVEL (R85) [SE board] ☆ 0.286 Vp-p (Burst level)  POSITION S1 1:Y/C ········ON 2:RGB ·······OFF 3:AUTO ·····ON 4:COMPO ··OFF	**Note:** Measuring conditions: • In the same condition as for the section 3.4. 1) Set the S1 switch of the VP board of the camera adapter KA-20 to the following position. 2) Adjust VRs to obtain specified levels.  
2	Y/R-Y/B-Y signal levels  Y2 LEVEL (R36) CHROMA GAIN (R85) B-Y OUT GAIN R-Y OUT GAIN Y1 LEVEL R36 Y2 LEVEL TP1 C42 SC FREQ TP6 T1 SC TRANS TP3 TP4 R89 R88 R60 R110 C50 H.LOCK TP2 BURST LEVEL SE (NTSC) BOARD R85 CHROMA GAIN TP5 R7 R94 QUAD PHASE INT SC COARSE R2 R128 INT SC FINE R27 Y1 LEVEL R73 BURST PHASE R19 R121 R-Y GAIN R16	Oscilloscope (H-rate, 10 : 1) ↑ with 1 kΩ ← terminator (see 3.2.2)	◎ TP23 [Extension board] with 1 kΩ termination ⏀ Y1 LEVEL (R27) [SE board] ☆ 0.835 Vp-p (with sync) ◎ TP25 [Extension board] with 1 kΩ termination ⏀ R-Y OUT GAIN (R2) [SE board] ☆ 0.7 Vp-p ◎ TP26 [Extension board] with 1 kΩ termination ⏀ B-Y OUT GAIN (R7) [SE board] ☆ 0.7 Vp-p	3) Set the Y/C selector (S1) of the VP board of the camera adapter KA-20 to "OFF" position. 4) Set the CABLE (MODE) SELECT switch on the left side of KA-20 to "VTR" position.   

No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure

3.6-N ADJUSTMENT OF CAMERA ADAPTER (KA-20) OUTPUT LEVEL

Note: The following should be adjusted after the adjustments of sections 3.4 and 3.5 "Encoder Adjustment - 1 & 2".

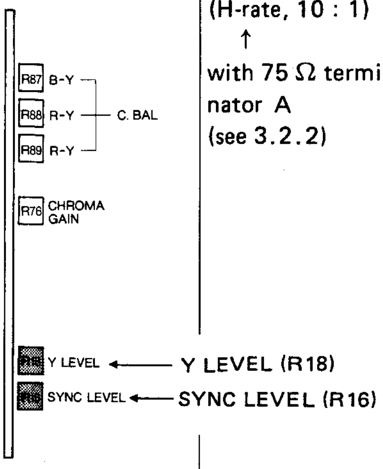
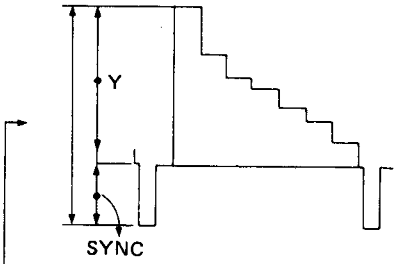
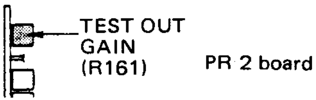
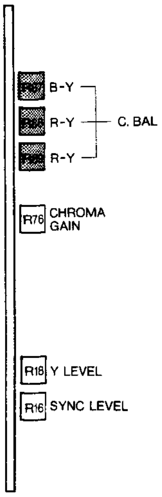
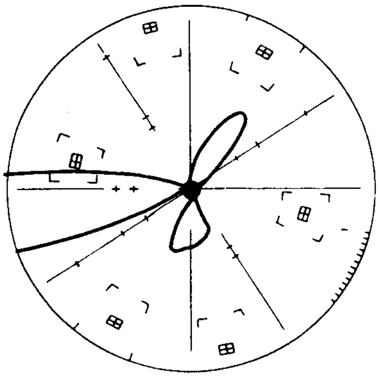
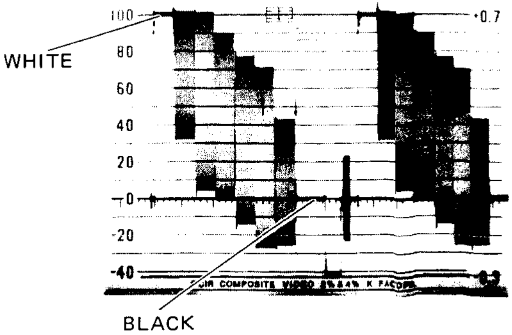
1	Output level (26-pin) Connector)	Oscilloscope (H-rate, 10 : 1) ↑ with 75 Ω ← terminator B ↓ GND (TP1 of Extension board)	VP board → Use the Extension board for it. ◎ TP18 [Extension board] or TP1 [VP board] with 75 Ω terminator B ⏀ G GAIN (R2) [VP board] ☆ 0.525 Vp-p ◎ TP17 [Extention board] or TP2 [VP board] with 75 Ω terminator B ⏀ R GAIN (R5) [VP board] ☆ 0.525 Vp-p ◎ TP19 [Extension board] or TP3 [VP board] with 75 Ω terminator B ⏀ B GAIN (R8) [VP board] ☆ 0.525 Vp-p  B GAIN R8 G GAIN R2 R GAIN R5 TP3 TP1 TP2 VP BOARD ON OFF 1 : Y/C 2 : RGB 3 : AUTO 4 : COMPO S1	**Note:** Measuring condition: • In the same condition as for the previous sections 3.4 and 3.5. 1) Set the RGB selector (S1) of the VP board of the camera adapter KA-20 to "ON" position and other selector (S1) to "OFF". 2) Adjust VRs to obtain the specified level.   

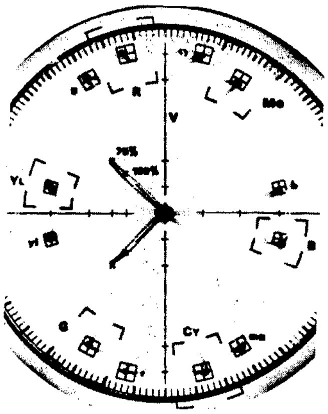
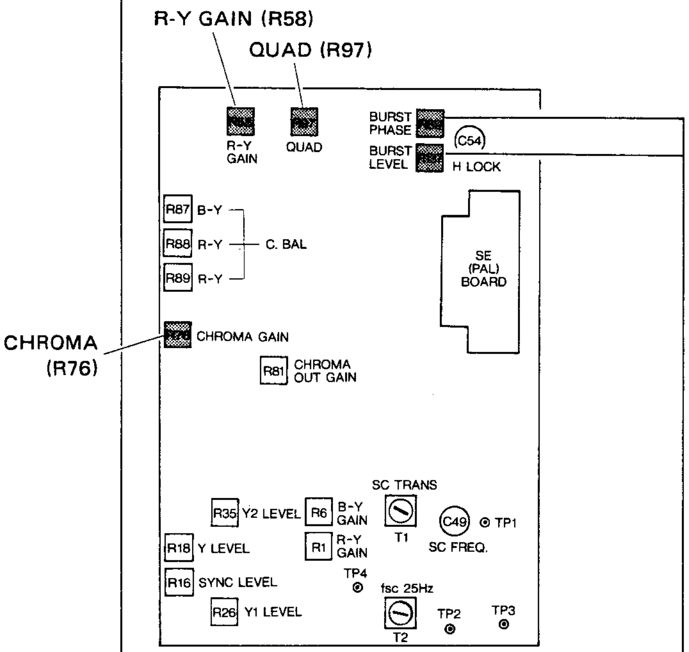
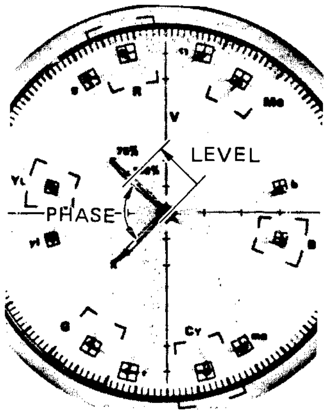
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure
		Oscilloscope (H-rate, 10 : 1) ↑ with 75 Ω ← terminator B ↓ GND (TP1 of Extension board)	◎ TP17 [Extention board] or TP2 [VP board[with 75 Ω terminator B ⏀ R-Y GAIN (R26) [VP board] ☆ 0.486 Vp-p (NTSC) 0.525 Vp-p (PAL) - - - - - - - - - - - - - - - - ◎ TP19 [Extension board] or TP3 [VP board[with 75 Ω terminator B ⏀ B-Y GAIN (R24) [VP board] ☆ 0.486 Vp-p (NTSC) 0.525 Vp-p (PAL)	3) Set the COMPO selector (S1) of the VP board of the camera adapter KA-20 to "ON" position and other selector (S1) to "OFF". 4) Adjust VRs to obtain the specified level. 5) Set the selectors (S1) on the VP board as follows (initial set positions): • Y/C selector ——→ OFF • RGB selector ——→ OFF • AUTO selector ——→ ON • COMPO selector ——→ OFF  

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⌽) Adjustment level (☆)	Adjustment procedure

3.4-P ENCODER ADJUSTMENT - 1 (Adjustment of composite signal) : PAL

Note: If this adjustment is performed without a vectorscope, proceed the adjustment and checkup of the items only from No. 1 (Bar level adjustment) to No. 3 (Carrier balance adjustment).

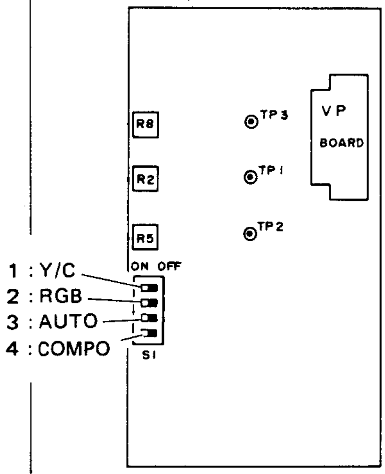
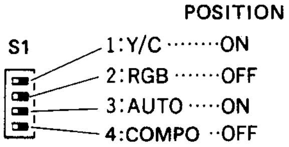
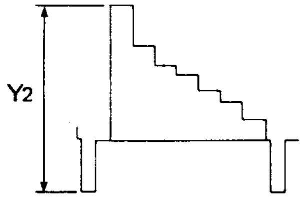
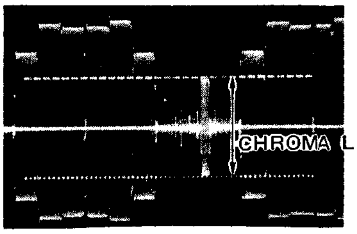
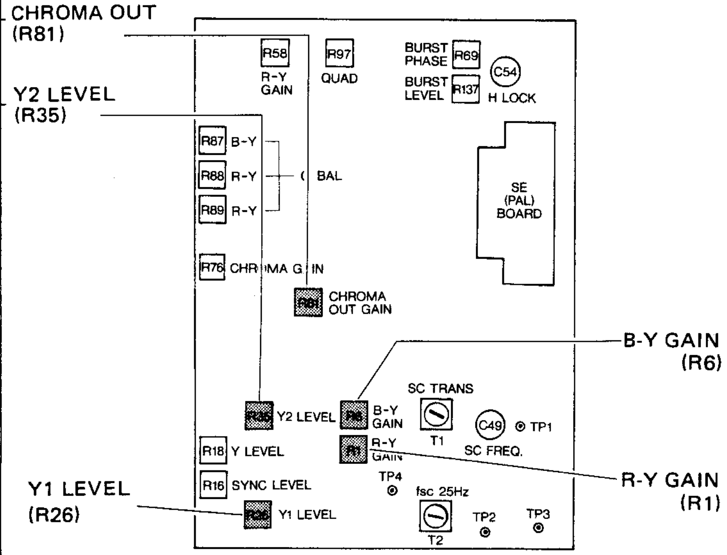
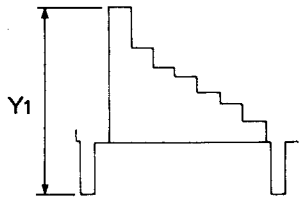
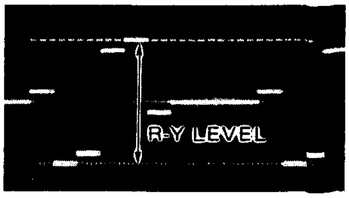
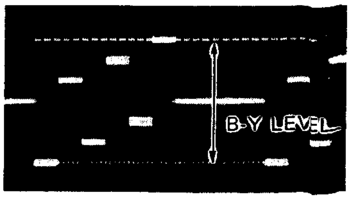
1	Bar level  R87 B-Y R88 R-Y R89 R-Y C. BAL R76 CHROMA GAIN Y LEVEL SYNC LEVEL Y LEVEL (R18) SYNC LEVEL (R16) SE board	Oscilloscope (H-rate, 10 : 1) ↑ with 75 Ω terminator A (see 3.2.2)	SE board → Use the Extension board for it. ◎ TP24 [Extension board] with 75Ω/75Ω terminator A ⌽ Y LEVEL (R18) [SE board] ☆ 0.7 Vp-p ⌽ SYNC LEVEL (R16) [SE board] ☆ 0.3 Vp-p	**Note:** Measuring conditions: ● Filter disk → 1 (closed) ● CAMERA/COLOR BARS switch → BARS ● PIX SELECT switch [CP board] → 3 (ENC) ● Adjust for the specified values. 
2	Test output level  TEST OUT GAIN (R161) PR 2 board	Waveform monitor or Oscilloscope (H-rate, 10 : 1)	◎ TEST OUTPUT terminal (with 75 Ω termination) ⌽ TEST OUT GAIN (R161) [PR2 board] ☆ 1.0 Vp-p (level between Sync tip and Y peak)	● Set for the specified value.
3	Carrier balance  B-Y R-Y R-Y C. BAL R76 CHROMA GAIN R18 Y LEVEL R16 SYNC LEVEL SE board	Waveform monitor or Oscilloscope (H-rate, 10 : 1)	◎ TEST OUTPUT terminal (with 75Ω termination) ⌽ B–Y C BAL (R87) [SE board] ⌽ R–Y C BAL (R88) [SE board] R–Y C BAL (R89) [SE board] ☆ Minimum carrier leak * Procedure with a vectorscope used 1) Vectorscope's GAIN → Maximum 2) Turn the C BAL VRs alternately to position the spots at the center of the screen. 	1) Turn the VRs R87 and R88 alternatively so that the carrier leakage of Black is minimized.  WHITE 100 80 60 40 20 0 -20 -40 0.7 BLACK 2) Adjust the R89 to minimize carrier leakage of each lines. The R89 minimize the carrier leakage of V-axis.

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure
4	Chroma level, etc. - Adjust chroma level first, then, adjust R-Y level.	Vectorscope	◎ TEST OUTPUT terminal (with 75 Ω termination) ⏀ CHROMA GAIN (R76) [SE board] ⏀ R-Y GAIN (R58) [SE board]	1) GAIN of vectorscope → CAL, or 75% (pre-set position) 2) Adjust VRs to set every spot (R, G, B, MG, CY, YL) at the specified point on the vectorscope's screen as shown below.  R Mg V 75% 100% YL B G Cy
5	Quadrature	 R-Y GAIN (R58) QUAD (R97) R-Y GAIN QUAD BURST PHASE BURST LEVEL C54 H LOCK R87 B-Y R88 R-Y R89 R-Y C. BAL SE (PAL) BOARD CHROMA (R76) CHROMA GAIN R81 CHROMA OUT GAIN SC TRANS R35 Y2 LEVEL R6 B-Y GAIN T1 C49 TP1 R18 Y LEVEL R1 R-Y GAIN SC FREQ. R16 SYNC LEVEL TP4 fsc 25Hz R26 Y1 LEVEL T2 TP2 TP3	⏀ QUAD (R97) [SE board]	
6	Burst phase & level		⏀ BURST PHASE (R69) [SE board] ⏀ BURST LEVEL (R137) [SE board]	- Adjust R69 and R137 respectively for correct burst phase and burst level.  R Mg V 75% LEVEL PHASE YL B G Cy

No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure

3.5-P ENCODER ADJUSTMENT - 2 (Adjustment of Y/C 443 and Y/R-Y/B-Y signal levels) : PAL

Note: The following adjustment should be performed successively after the procedure of 3.4-P Encoder Adjustment -1.

1	Y/C 443 signal level	Oscilloscope (H-rate, 10 : 1) ↑ with 1 kΩ terminator (see 3.2.2)  TP3 VP BOARD R8 TP1 R2 TP2 R5 ON OFF 1 : Y/C 2 : RGB 3 : AUTO 4 : COMPO S1	SE board → Use the Extension board for it. ◎ TP23 [Extension board] with 1 kΩ termination ⏀ Y2 LEVEL (R35) [SE board] ☆ 1.0 Vp-p (with sync) ◎ TP27 [Extension board] with 1 kΩ termination ⏀ CHROMA OUT (R81) [SE board] ☆ 0.3 Vp-p (Burst level)  POSITION S1 1:Y/C ········ON 2:RGB ·······OFF 3:AUTO ·····ON 4:COMPO ··OFF	**Note:** Measuring conditions: • In the same condition as for the section 3.4-P. 1) Set the S1 switch of the VP board of the camera adapter KA-20 to the following position. 2) Adjust VRs to obtain specified levels.   CHROMA LEVEL
2	Y/R-Y/B-Y signal levels	Oscilloscope (H-rate, 10 : 1) ↑ with 1 kΩ terminator (see 3.2.2)	◎ TP23 [Extension board] with 1 kΩ termination ⏀ Y1 LEVEL (R26) [SE board] ☆ 1.0 Vp-p (with sync) ◎ TP25 [Extension board] with 1 kΩ termination ⏀ R-Y OUT GAIN (R1) [SE board] ☆ 0.7 Vp-p ◎ TP26 [Extension board] with 1 kΩ termination ⏀ B-Y OUT GAIN (R6) [SE board] ☆ 0.7 Vp-p  CHROMA OUT (R81) Y2 LEVEL (R35) Y1 LEVEL (R26) R58 R-Y GAIN R97 QUAD BURST PHASE R69 C54 BURST LEVEL R137 H LOCK R87 B-Y R88 R-Y R89 R-Y BAL SE (PAL) BOARD R76 CHROMA GAIN R81 CHROMA OUT GAIN B-Y GAIN (R6) SC TRANS R35 Y2 LEVEL R6 B-Y GAIN C49 TP1 T1 R1 R-Y GAIN SC FREQ. R18 Y LEVEL R16 SYNC LEVEL TP4 fsc 25Hz R-Y GAIN (R1) R26 Y1 LEVEL T2 TP2 TP3	3) Set the Y/C selector (S1) of the VP board of the camera adapter KA-20 to "OFF" position. 4) Set the CABLE (MODE) SELECT switch on the left side of KA-20 to "VTR" position.   

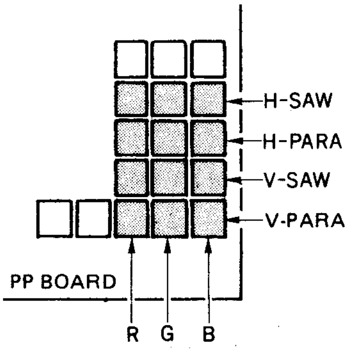
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure

3.6-P ADJUATMENT OF CAMERA ADAPTER OUTPUT LEVEL

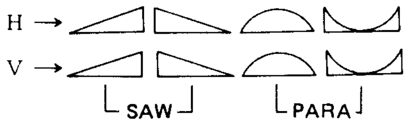
- Refer to "3.6 ADJUSTMENT OF CAMERA ADAPTER (KA-20) OUTPUT LEVEL" of page 3-7-N.

<table>
<tr><th>No.</th><th>Item</th><th>Measuring instruments</th><th>Measuring point (◎)
Adjustment parts (⌽)
Adjustment level (☆)</th><th>Adjustment procedure</th></tr>
</table>

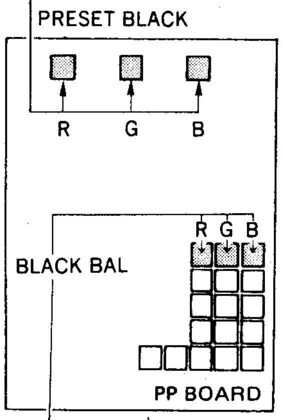
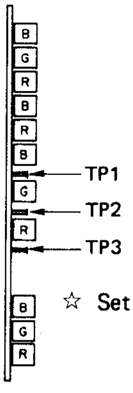
3.7 ADJUSTMENT OF STATIC SHADING

<table>
<tr>
<td>1</td>
<td>Static shading
 </td>
<td>Oscilloscope
(H-rate, 10 : 1)</td>
<td>◎ TEST OUTPUT (with 75 Ω termination)
⌽ STATIC SHADING [PP board]
<table>
<tr><th>PIX SEL / SW</th><th>0</th><th>1</th><th>2</th></tr>
<tr><td></td><td>R</td><td>G</td><td>B</td></tr>
<tr><td>V-SAW</td><td>R31</td><td>R29</td><td>R27</td></tr>
<tr><td>V-PARA</td><td>R45</td><td>R43</td><td>R41</td></tr>
<tr><td>H-SAW</td><td>R10</td><td>R8</td><td>R6</td></tr>
<tr><td>H-PARA</td><td>R20</td><td>R18</td><td>R16</td></tr>
</table>
☆ Minimum shading</td>
<td>Note: Measuring condition:
• Filter disk set to "1" (CLOSE) position.
• CAMERA/COLOR BARS switch to "CAM".
• WHITE BAL switch set to "PRESET".
• HI-SENS switch set to "+18 dB".
• Change the set position of S2 on the CP board for the BLACK ADJUST mode.
S2 → 1 : ON (CHECK switch)
→ 2 : ON (CONTOUR switch)

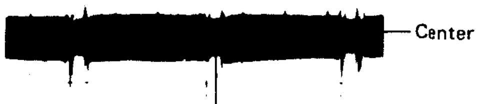
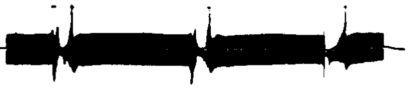
R34
R37
S2 SWITCH
CP BOARD

1) Correct static shading for each channel by switching the PIX SELECT switch on the CP board to a corresponding position.

2) Set the S2 switch on the CP board to "OFF" position.</td>
</tr>
</table>

3.8 ADJUSTMENTS OF PRESET BLACK AND BLACK BALANCE

<table>
<tr>
<td>1</td>
<td>Preset black
 </td>
<td>Oscilloscope
(H-rate, 10 : 1)</td>
<td>◎ TP [PR1 board] ⌽ VR [PP]
<table>
<tr><td>B</td><td>TP1</td><td>B PRESET BLACK (R80)</td></tr>
<tr><td>G</td><td>TP2</td><td>G PRESET BLACK (R82)</td></tr>
<tr><td>R</td><td>TP3</td><td>R PRESET BLACK (R84)</td></tr>
</table>


B
G
R
B
R
B
TP1
G
TP2
R
TP3
B
G
R
PR 2 board

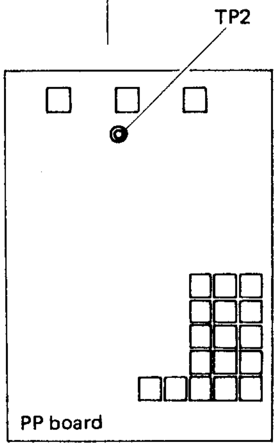
☆ Set to the tip of C. HD pulse.</td>
<td>Note: Measuring condition:
• The same for the above section 3.7
1) Adjust VRs for each channel so that the center of video noise is positioned at the tip of C. HD pulse.
 </td>
</tr>
<tr>
<td>2</td>
<td>Black balance</td>
<td>Oscilloscope
(H-rate, 10 : 1)
DC input</td>
<td>◎ TP [PR1 board] ⌽ VR [PP]
<table>
<tr><td>B</td><td>TP1</td><td>B BLACK BAL (R67)</td></tr>
<tr><td>G</td><td>TP2</td><td>G BLACK BAL (R68)</td></tr>
<tr><td>R</td><td>TP3</td><td>R BLACK BAL (R69)</td></tr>
</table>
☆ Non-straight fluctuation</td>
<td>2) Switching the HI-SENS switch in the range between 0 dB and +18 dB repeatedly, adjust the waveform so that the center of noise does not fluctuate straight.
</td>
</tr>
</table>

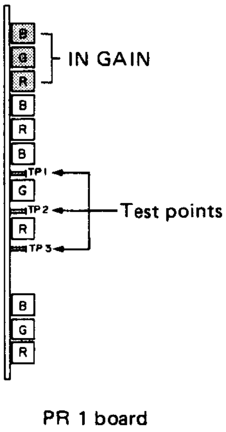
<table>
<tr><th>No.</th><th>Item</th><th>Measuring instruments</th><th>Measuring point (◎)
Adjustment parts (Ⓣ)
Adjustment level (☆)</th><th>Adjustment procedure</th></tr>
</table>

3.9 ADJUSTMENT OF IN-GAIN (Setting of input signals)

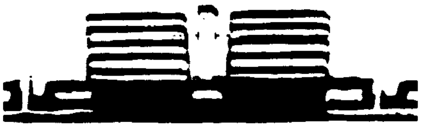
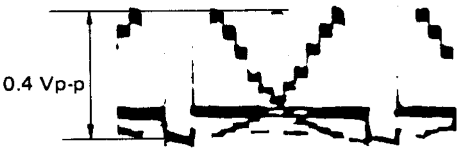
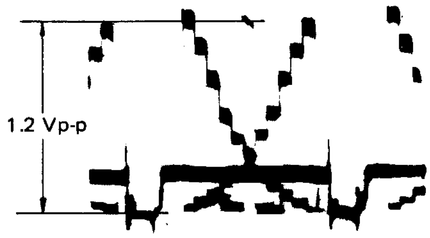
<table>
<tr><td rowspan="3">1</td><td rowspan="3">In-gain</td><td rowspan="3">Grey scale chart
↓
Just scan

Oscilloscope
(H-rate, 10 : 1)



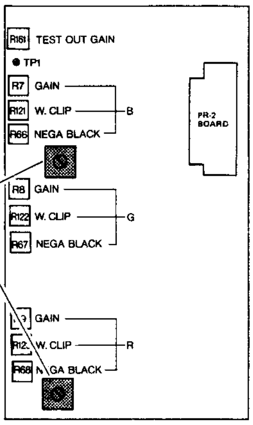
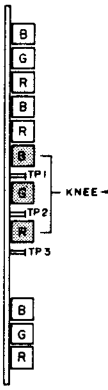
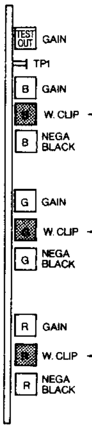
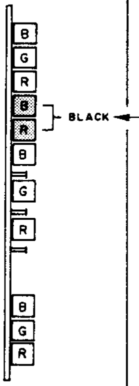
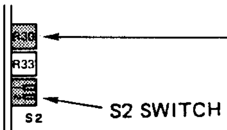
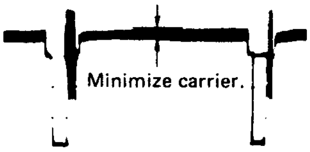


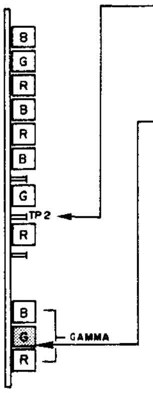
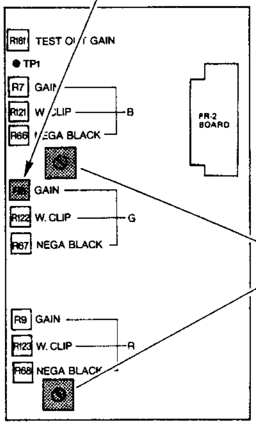
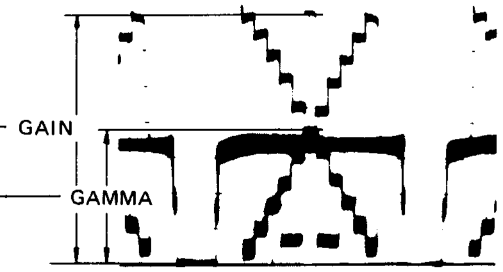
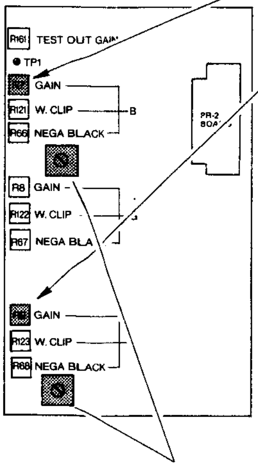
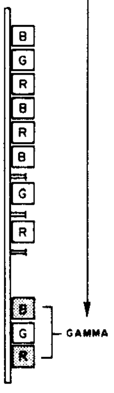
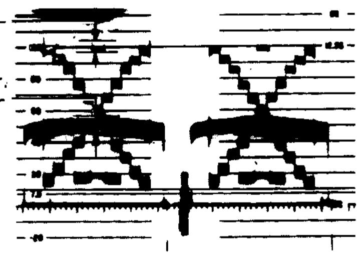
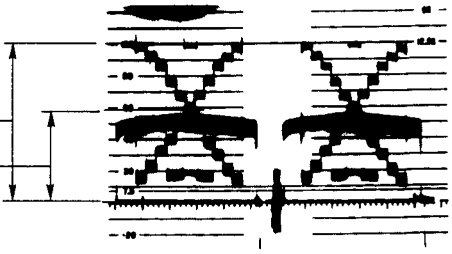
B
G
R
IN GAIN
B
R
B
TP1
G
TP2
R
TP3
Test points
B
G
R
PR 1 board

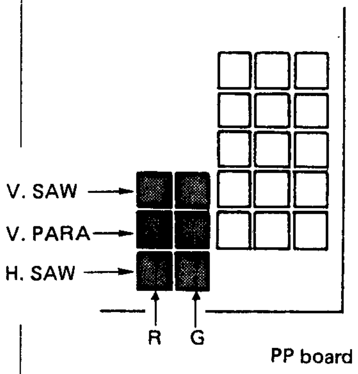
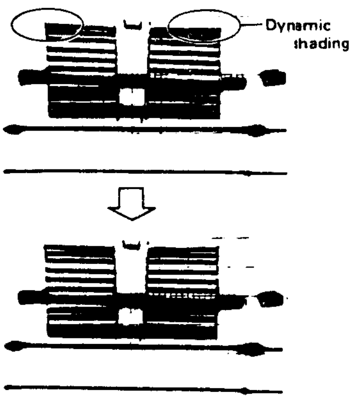
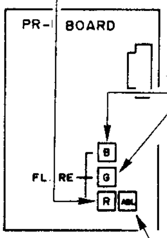
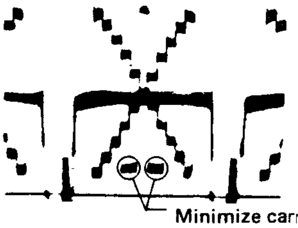
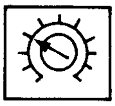
</td><td></td><td>Note: Measuring condition:
• WHITE BAL switch set to "PRESET"
• Sufficient lighting so that the iris is set at F5.6 or small with 100% incoming signals
• HI-SENS switch set to "0 dB"
• Check up that the correlative position of the camera and the grey scale chart is correct.
• Confirm uniformity of the lighting against the grey scale chart.
Connect an oscilloscope to TP1 (B-CH) of the PP board, and observing it on the V-rate adjust the lighting so that video signal waveform becomes flat.

• Set the lens iris to the "MANUAL" mode.</td></tr>
<tr><td>◎ TP2 (G-CH) [PP board]
Ⓣ Lens iris
☆ 0.4 Vp-p (100%)</td><td>1) Adjust the lens iris to obtain the specified level (100%).

Note: Until B and R gain adjustments are completed, do not touch the lens iris.</td></tr>
<tr><td>◎ TP [PR 1 board] Ⓣ VR [PR1]
↓ ↓
<table><tr><td>B</td><td>TP1</td><td>B IN-GAIN (R1)</td></tr><tr><td>G</td><td>TP2</td><td>G IN-GAIN (R2)</td></tr><tr><td>R</td><td>TP3</td><td>R IN-GAIN (R3)</td></tr></table>
☆ 1.2 Vp-p</td><td>2) Adjust VRs to obtain the specified values at the test points respectively.
 </td></tr>
</table>

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure

3.10 ADJUSTMENTS OF VIDEO OUTPUT LEVEL AND BLACK BALANCE

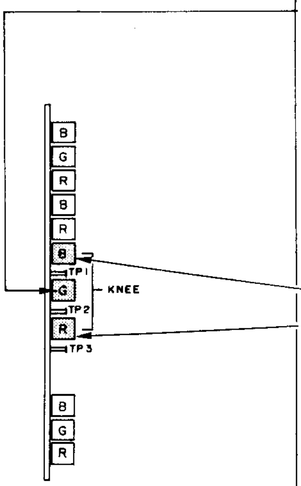
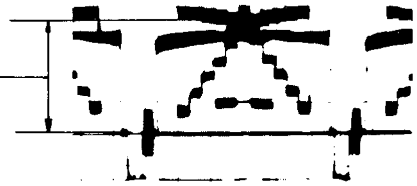
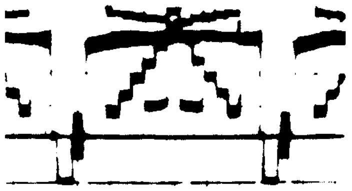
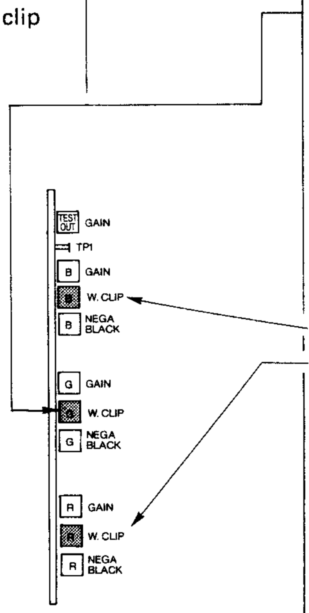
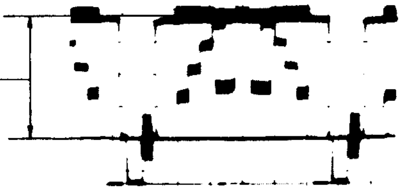
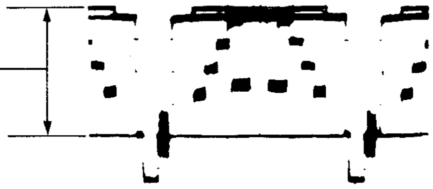
1	Preparation Don't tamper these switches.	 R161 TEST OUT GAIN TP1 R7 GAIN R121 W. CLIP R66 NEGA BLACK B R8 GAIN R122 W. CLIP R67 NEGA BLACK G GAIN W. CLIP R68 NEGA BLACK R PR-2 BOARD	PR-2 board → Use the Extension board for it.  B G R B R B TP1 G KNEE TP2 R TP3 B G R RP1 board  TEST OUT GAIN TP1 B GAIN W. CLIP B NEGA BLACK G GAIN W. CLIP G NEGA BLACK R GAIN W. CLIP R NEGA BLACK PR 2 board	**Measuring condition:** • Adjustments of this section should be performed after completion of the adjustments of the sections 3.4 and 3.5 and in succession to the previous section 3.9. • Lens iris set to "MANUAL" position • HI-SENS switch set to "0 dB" position • WHITE BAL switch set to "PRESET" • CONTOUR switch (S2-2) of the CP board is set to "OFF" position. • KNEE VRs (PR 1 board) is released (turned fully counterclockwise). • WHITE CLIP VRs (PR 2 board) is released (turned fully clockwise). • Check up that the correlative position of the camera and the chart is correct. • Confirm the uniformity of the lighting.
2	R/B black balance  B G R B R BLACK B G R B G R PR 1 board	Lens: Capped Oscilloscope (H-rate, 10 : 1)	 R30 R33 S2 S2 SWITCH CP board ◎ TEST OUTPUT (with 75 Ω termination) ⏀ B BLACK (R16)[PR 1 board] ⏀ R BLACK (R18)[PR 1 board] ☆ Minimum carrier	1) Set the filter disk to "1" (closed) position. 2) Change the set position of S2 on the CP board for the BLACK ADJUST mode. S2 → 1 : ON (CHECK switch) 2 : ON (CONTOUR switch) 3) Alternately turn VRs to minimize the carrier leak.  Minimize carrier. 4) Set the S2 switch to "OFF" position.
3	Master black	Oscilloscope (H-rate, 10 : 1)	◎ TP10 [Extension board] ⏀ MASTER BLACK (R30) [CP board]	5) Adjust R34 so that video noise is clipped by the center.

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
4	G-CH gain & gamma	Grey scale chart ↓ Just scan	**Check up the following:** TP2 (G-CH)[PR 1 board] → 1.2 Vp-p (100% grey scale) └ Adjust by the lens iris.	
	 B G R B R B G TP2 R B G R GAMMA PR 1 board	Oscilloscope (H-rate, 10 : 1)  R161 TEST OUT GAIN TP1 R7 GAIN R121 W.CLIP R66 NEGA BLACK B PR-2 BOARD GAIN R122 W.CLIP G R67 NEGA BLACK R9 GAIN R123 W.CLIP R R68 NEGA BLACK	◎ TP10 [Extension board] Ⓣ G GAIN (R8)[PR 2 board] ☆ 1.4 Vp-p Ⓣ G GAMMA (R87) [PR 1 board] ☆ NTSC : 0.73 Vp-p PAL : 0.78 Vp-p Don't tamper these switches.	6) Adjust VRs to obtain the specified levels, respectively. 
4	R/B CH gain & gamma  R161 TEST OUT GAIN TP1 GAIN R121 W.CLIP B R66 NEGA BLACK PR-2 BOARD R8 GAIN R122 W.CLIP G R67 NEGA BLACK GAIN R123 W.CLIP R68 NEGA BLACK Don't tamper these switches.	Oscilloscope or Waveform monitor  B G R B R B G R B G R GAMMA PR board	◎ TEST OUTPUT (with 75 Ω termanation) Ⓣ B GAIN (R7) [PR 2 board] Ⓣ R GAIN (R9) [PR 2 board] Ⓣ B GAMMA (R86)[PR 1 board] Ⓣ R GAMMA (R88)[PR 1 board] ☆ Minimum carrier leak ☆ NTSC : 100 IRE (0.714 V) PAL : 100% (0.7 V) ◎ TEST OUTPUT ☆ NTSC : 58 IRE (0.414 V) PAL : 56% (0.39 V)	7) Adjust VRs to minimize video signal's white level and carrier at the cross point. Minimize carrier. Minimize carrier.  ● Check up that video signal levels at the TEST OUTPUT is in the specified range and carrier leaks are minimized. ● If there is difference between B and R levels, slightly turn R8 (G-GAIN) or R87 (G-GAMMA) of the PR 1/PR 2 board, and then alternately turn R7 (B-GAIN) and R9 (R-GAIN) (or R86 [B-GAMMA] and R88 [R-GAMMA]) to minimize the carrier leak. 

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
5	V. dynamic shading	Oscilloscope (V-rate), or Waveform monitor (2 V)  	◎ TEST OUTPUT (with 75 Ω termination) Ⓣ Following VRs on PP board ◺ G-DY - V. SAW (R33) R-DY - V. SAW (R35) G-DY-H. SAW (R103) R-DY-H. SAW (R105) ⌓ G-DY - V. PARA (R47) R-DY - V. PARA (R49) ☆ Minimum dynamic shading	**Note:** Check up the following: TEST OUTPUT → 0.7 Vp-p ● If dynamic shading (carrier leak) is observed in the portion of video signal's white level, perform the following adjustment. (At this time, confirm the setting of lens iris. NTSC : F5.6 or smaller PAL : from F4 to F8. 8) Minimize dynamic shading. Adjust ◺ first, then adjust ⌓ . 
6	Flare correction	Oscilloscope (H-rate), or Waveform monitor Grey scale chart ↓ Just scan  	PR 1 board → Use the Extention board for it. ◎ TEST OUTPUT (with 75 Ω termination) Ⓣ R FLARE (R48) [PR 1 board] ☆ Fully clockwise position Ⓣ G FLARE (R47)[PR-1 board] Ⓣ B FLARE (R46) [PR-1 board] ☆ Minimum carriers in the black portion	**Check up the following:** Grey scale's white level → 100 % TP2 (G-ch)[TP-1 board] → 1.2 Vp-p, or TEST OUTPUT (with 75 Ω termination) → NTSC : 0.714 Vp-p → PAL : 0.7 Vp-p (Adjust by the lens iris.) Black balance is adjusted. (Filter disk → "1" position (closed) 9) Set the filter disk to "2" position (3200 K). 10) Turn R48 fully clockwise. 11) Adjust VRs to minimize carriers in the black portion. 
7	ABL	Grey scale chart ↓ Just scan	◎ TEST OUTPUT (with 75 Ω termination) Ⓣ ABL (R60) [PR 1 board] ☆ 4 stops from fully counter-clockwise	● Check up the same condition existing as in the above step 6. 1) Set the ABL VR to the following position.  (4 stops from fully counterclockwise)

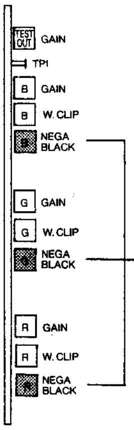
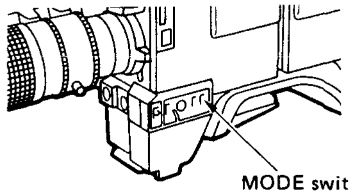
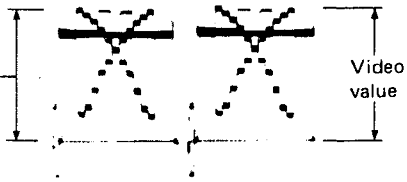
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure

3.11 ADJUSTMENTS OF KNEE SLOPE AND WHITE CLIP

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
1	Knee slope	Waveform monitor or Oscilloscope (H-rate, 10 : 1)	◎ TEST OUTPUT (with 75 Ω termination)	**Measuring condition:** - The following items should be adjusted after completion of the section 3.10. **Check the following:** - Grey scale's white level → 100% TEST OUTPUT (75 Ω terminated) → NTSC : 0.714 Vp-p (100 IRE) → PAL : 0.7 Vp-p (100%) (Adjust by the lens iris.)
		 B G R B R B TP1 G KNEE TP2 R TP3 B G R PR 1 board	Ⓣ G KNEE (R58)[PR 1 board] ☆ Just before carrier leak NTSC : 0.714 Vp-p (100 IRE) PAL : 0.7 Vp-p (100%)	1) Adjust R58 so that G knee appears just before carrier leak of the white level. 
			Ⓣ B KNEE (R56)[PR 1 board] Ⓣ R KNEE (R59)[PR 1 board] ☆ Minimum carrier leak	2) Set the HI-SENS switch to "9 dB" position. 3) Alternately turn R56 and R59 to minimize carrier leaks respectively. 
2	White clip	 TEST OUT GAIN TP1 B GAIN W.CLIP B NEGA BLACK G GAIN W.CLIP G NEGA BLACK R GAIN W.CLIP R NEGA BLACK PR 2 board	Ⓣ G W.CLIP (R122)[PR 2 board] ☆ Lower carrier leak: NTSC : 0.785 Vp-p (110 IRE) PAL : 0.77 Vp-p (110%)	4) Set the HI-SENS switch to "18 dB" position. 5) Adjust lower carrier leak to be of 0.785 Vp-p (110 IRE : NTSC), 0.77 Vp-p (110% : PAL) 
			Ⓣ B W.CLIP (R121)[PR 2 board] Ⓣ R W.CLIP (R123)[PR 2 board] ☆ Minimum carrier leak NTSC : 0.785 Vp-p (110 IRE) PAL : 0.77 Vp-p (110%)	6) Turn R121 and R123 alternately to minimize carrier leaks respectively.  **Check up the following:** - Repeat the steps 5) and 6) until clipping level becomes 0.785 Vp-p (110 IRE : NTSC) 0.77 Vp-p (110% : PAL) 7) Set the HI-SENS switch to "0 dB" position.

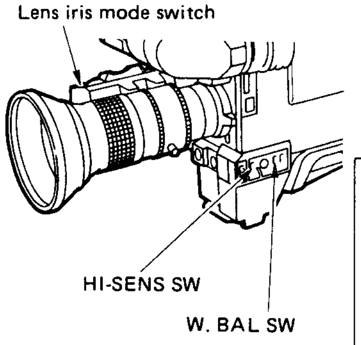
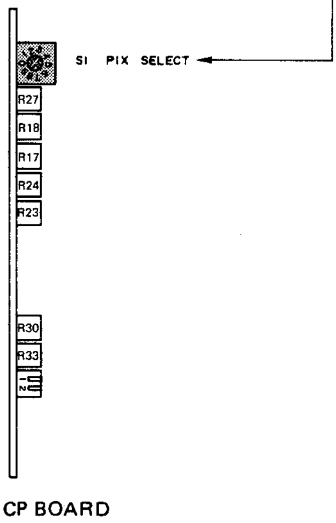
No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure

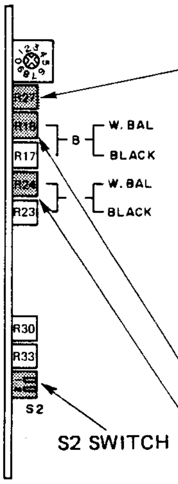
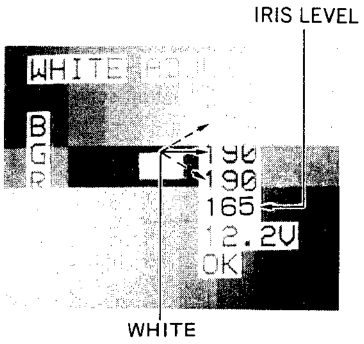
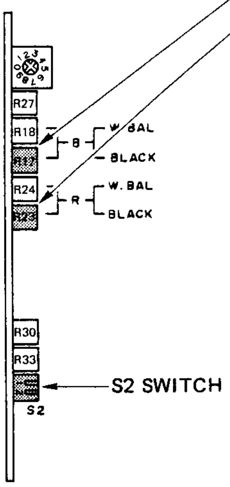
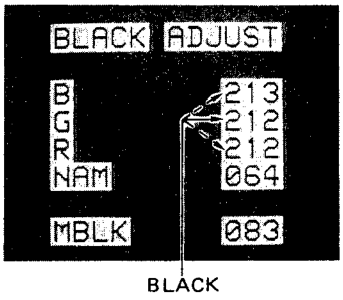
3.12 ADJUSTMENT OF NEGATIVE VIDEO SIGNALS

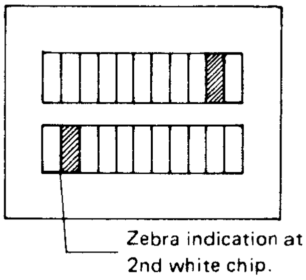
1	Negative video signal  TEST OUT GAIN TP1 B GAIN B W.CLIP NEGA BLACK G GAIN G W.CLIP NEGA BLACK R GAIN R W.CLIP NEGA BLACK	Oscilloscope (H-rate, 10 : 1) or Waveform monitor Grey scale chart ↓ Just scan	◎ TEST OUTPUT (with 75 Ω) ⏀ G NEGA BLK (R67) [PR-2] B NEGA BLK (R66) [PR-2] R NEGA BLK (R68) [PR-2] ☆ NTSC : 0.714 Vp-p (100 IRE) PAL : 0.7 Vp-p (100%) Minimum carrier leak	1) Set the MODE switch to "NEGA" position.  MODE switch 2) Adjust VRs so that G/B/R signal level becomes specified value and carrier leak is minimized respecitively.  Video value 3) Set the MODE switch to "CAM" position.

3.13 ADJUSTMENT OF AUTOMATIC CONTROL CIRCUITS (AUTO IRIS, AUTO WHITE, AUTO BLACK, LEVEL INDICATOR)

Note: For this adjustment, an electronic viewfinder (VF-P10, VF-P400, etc.) is needed.
(Otherwise the extension cable SCV0277-001 can be used in combination with a B/W monitor connected.)

1	Preparation	Grey scale chart ↓ Just scan Oscilloscope or Waveform monitor	 Lens iris mode switch HI-SENS SW W. BAL SW  S1 PIX SELECT R27 R18 R17 R24 R23 R30 R33 CP BOARD	**Measuring condition:** • Adjustments of the previous sections 3.10 and 3.11 have been completed. • HI-SENS switch set to "0 dB" position. • WHITE BAL switch set to "PRESET". • PIX SELECT switch (CP board) set to "3" (ENC) position. • Lens iris mode switch set to "MANUAL" position. • Filter disk set to "2" (3200 K) position. **Check up the following:** • Grey scale's white level: 100% TP2 (G-ch)[PR-1 board] → 1.2 Vp-p, or TEST OUTPUT (75 Ω terminated) → NTSC : 0.714 Vp-p (100 IRE) → PAL : 0.7 Vp-p (100 %) (Setting can be done by the lens iris.) • Black balance is correctly adjusted. (Filter disk set to "1" (closed" position.)

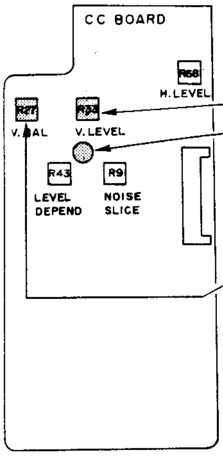
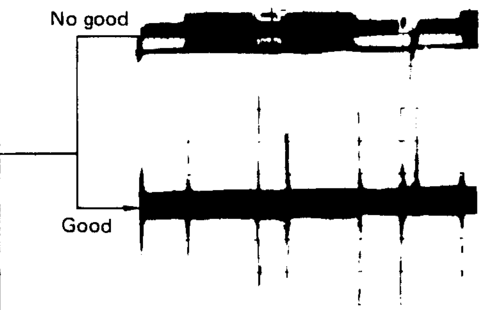
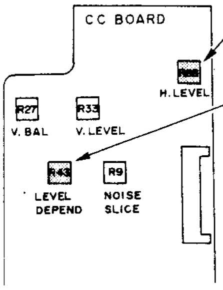
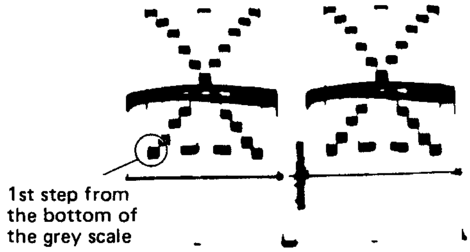
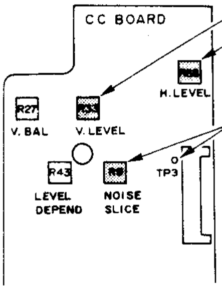
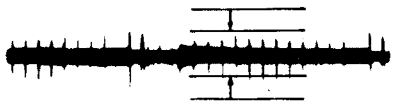
No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure
2	Lens iris	Grey scale chart ↓ Just scan  R27 R18 R17 R24 R23 B R W. BAL BLACK W. BAL BLACK R30 R33 S2 S2 SWITCH CP BOARD	◎ Viewfinder's CRT ⦶ IRIS LEVEL (R27)[CP board] ☆ "165" NAM value	1) Switch the set position of S2 (switch on the CP board) for the WHITE ADJUST mode. • S2 → 1 : ON (CHECK switch) 2 : OFF (CONTOUR switch) 2) Set the NAM value on the CRT to "165".  IRIS LEVEL WHITE B G R 196 190 165 12.2V OK WHITE
3	Auto white		⦶ B WHITE (R18) [CP board] ⦶ R WHITE (R24) [CP board] ☆ Displayed values: B = R = G	3) Adjust R22 and R28 so that B and R values displayed on the CRT coincide with that of G.
4	Auto black	 R27 R18 R17 R24 R23 B R W. BAL BLACK W. BAL BLACK R30 R33 S2 S2 SWITCH CP BOARD	⦶ B BLACK (R17) [CP board] ⦶ R BLACK (R23) [CP bpard] ☆ Displayed values: B = R = G	4) Filter disk set to "1" (closed) position 5) Change the set position of S2 on the CP board for the BLACK ADJUST mode. • S2 → 1 : ON (CHECK switch) 2 : ON (CONTOUR switch) 6) Adjust R21 and R27 so that B and R values displayed on the CRT coincide with that of G.  BLACK ADJUST B G R NAM MBLK 213 212 212 064 083 BLACK 7) Change the S2's set position to the original position. • S2 → 1 : OFF (CHECK switch) 2 : ON (CONTOUR switch)

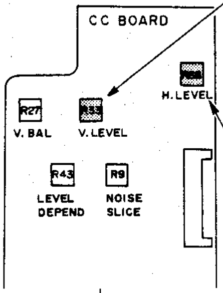
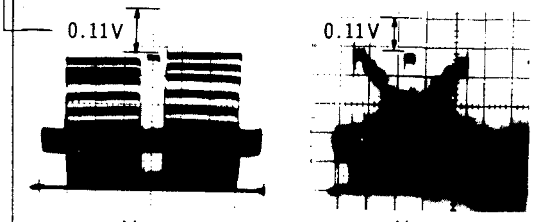
<table>
<tr><th>No.</th><th>Item</th><th>Measuring instruments & Input signals</th><th>Measuring point (◎)
Adjustment parts (Ⓣ)
Adjustment level (☆)</th><th>Adjustment procedure</th></tr>
<tr><td>5</td><td></td><td></td><td>◎ Viewfinder screen
◎ TEST OUTPUT (75 Ω terminated)
Ⓣ Lens iris
☆
<table>
<tr><th></th><th>TEST OUTPUT</th><th>Level</th></tr>
<tr><td>NTSC</td><td>100%</td><td>0.714 Vp-p</td></tr>
<tr><td>PAL</td><td></td><td>0.7 Vp-p</td></tr>
</table>
Note:
Zebra indicating part is between 85 to 95% of nominal video amplitude. Eusure the iris opening to get the speified value at video output with oscilloscope if EIA log. grey scale is used.</td><td>1) Set the lens iris switch to MANU and adjust the iris manually so that the TEST OUTPUT connector is 100%.
2) In the viewfinder, check that the stripes are displayed as shown below.
If the correct display is not observed, press the LEVEL INDICATOR switch on the front of the camera in case of the switch off.


Standard display with JVC grey scale</td></tr>
<tr><td></td><td></td><td></td><td>◎ Viewfinder screen
Ⓣ ZEBRA SET (R5) [ZERBRA SUB board on the SE board]</td><td>3) Adjust ZEBRA SET (R5) so that the stripe pattern is displayed in the second step from the white position.</td></tr>
</table>

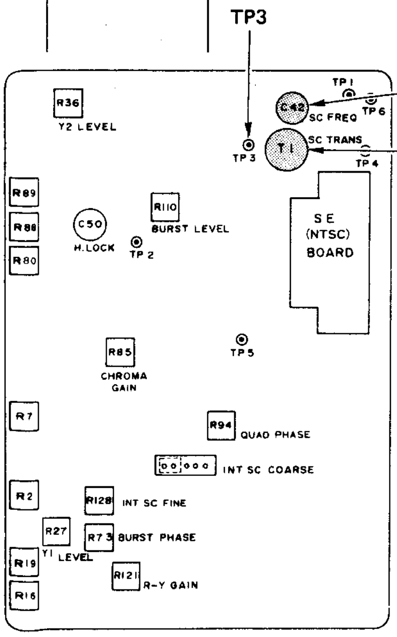
No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure

3.14 ADJUSTMENT OF CONTOUR CORRECTOR

No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure
1	V. zero balance	Oscilloscope (V-rate, 10 : 1) Grey scale chart ↓ Just scan  CC BOARD R68 H.LEVEL R27 V.BAL R33 V.LEVEL C20 R43 LEVEL DEPEND R9 NOISE SLICE	⏀ V LEVEL (R33) [CC1 board] ☆ Fully clockwise position	**Measuring condition:** • CONTOUR switch (S2-2) on the CP board set to ON • Lens iris set to "MANUAL" • HI-SENS switch set to "0 dB" position • Grey scale's white level: 100 % • TEST OUTPUT (75 Ω terminated) → NTSC : 0.714 Vp-p (100IRE) → PAL : 0.7 Vp-p (100 %) (Adjustment can be done by the lens iris.) • White balance and black balance have been completely adjusted. 1) Turn R33 fully clockwise.
			◎ C20 (⊖) [CC1 board]. ⏀ V. BAL (R27) [CC1 board] ☆ Minimum video component	2) Adjust R27 to minimize video component. 
2	Level dependent	 CC BOARD R68 H.LEVEL R27 V.BAL R33 V.LEVEL R43 LEVEL DEPEND R9 NOISE SLICE	⏀ H. LEVEL (R68)[CC1 board] ☆ Fully clockwise position	3) Turn R68 fully clockwise.
			◎ TEST OUTPUT (with 75 Ω termination) ⏀ LEVEL DEPEND (R43)[CC1]	4) Adjust R43 so that contour disappears at the 1st step from the bottom of the grey scale. 
3	Noise slice	 CC BOARD R68 H.LEVEL R27 V.BAL R33 V.LEVEL R43 LEVEL DEPEND R9 NOISE SLICE TP3	⏀ V. LEVEL (R33) [CC1 board] ⏀ H. LEVEL (R68) [CC1 board] ☆ Mechanical centers	5) Set VRs to their mechanical centers respectively.
			◎ TP3 ⏀ NOISE SLICE(R9)[CC1 board] ☆ Noise level half as much as the maximum value	6) Adjust R9 so that noise level becomes half as much as the maximum value. 

No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
4	Contour level	Grey scale chart ↓ Just scan	◎ TEST OUTPUT (with 75 Ω termination) Ⓣ Lens iris ☆ 0.57 Vp-p (80 IRE)	1) Adjust the grey scale's white level to the specified value.
		Oscilloscope (V-rate, 10 : 1)  CC BOARD R27 V. BAL R33 V. LEVEL R68 H. LEVEL R43 LEVEL DEPEND R9 NOISE SLICE	Ⓣ V. LEVEL (R33) [CC1 board] ☆ 0.11 Vp-p (15 IRE)	2) Adjust contour level to the specified value.  V-rate H-rate
		(H-rate, 10 : 1)	Ⓣ H. LEVEL (R68) [CC1 board] ☆ 0.11 Vp-p (15 IRE)	3) Or use in-mega cycle test card and set H-LEVEL so that the 5 MHz point shows 80% modulation of 0.5 MHz. It is necessary to set the lens iris so that the video level at 0.5 MHz becomes 0.57 Vp-p (NTSC) or 0.56 Vp-p (PAL).

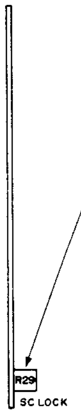
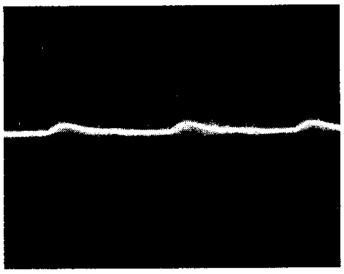
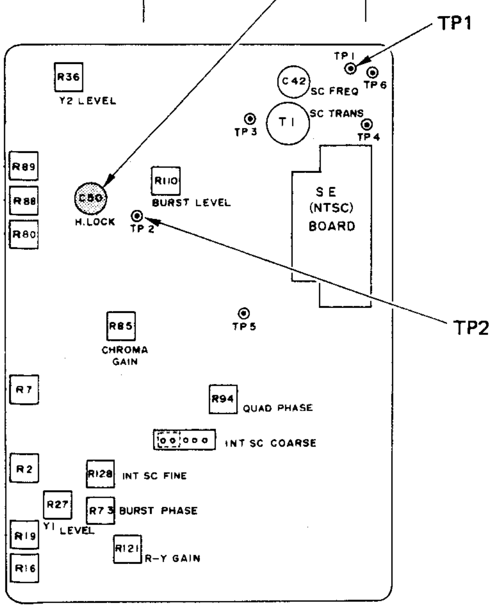
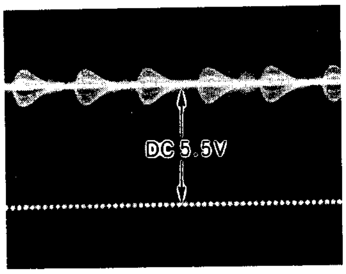
3. 15-N ADJUSTMENT OF SSG (Adjustment of internal sync. signal) : NTSC

1	SC frequency	Frequency counter Oscilloscope  TP3 R36 Y2 LEVEL TP1 C42 SC FREQ TP6 TP3 T1 SC TRANS TP4 R89 R88 R80 C50 H.LOCK TP 2 R110 BURST LEVEL SE (NTSC) BOARD R85 CHROMA GAIN TP5 R7 R94 QUAD PHASE INT SC COARSE R2 R128 INT SC FINE R27 Y1 LEVEL R73 BURST PHASE R19 R16 R121 R-Y GAIN	SE board → Use the Extension board for it. ◎ TP3 [SE board] Ⓣ SC FREQ (C42) [SE board] ☆ 3.579545 MHz ± 10 Hz Ⓣ SC TRANS (T1) [SE board] ☆ Maximum amplitude	• Warm up the camera with the lens iris closed for more than 15 minutes. • Frequency counter with: (1) Display of 8 figures or more (2) Stability of over 0.1 ppm (or 1×10^{-7}) at 0°C ~ +40°C. • Do not touch the following parts: INT SC PHASE - COARSE (S1) FINE (R128) 1) Adjust C42 to obtain the specified frequency. 2) Set T1 for the maximum output level.

No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure

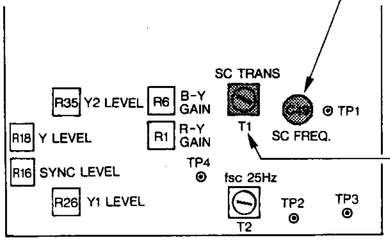
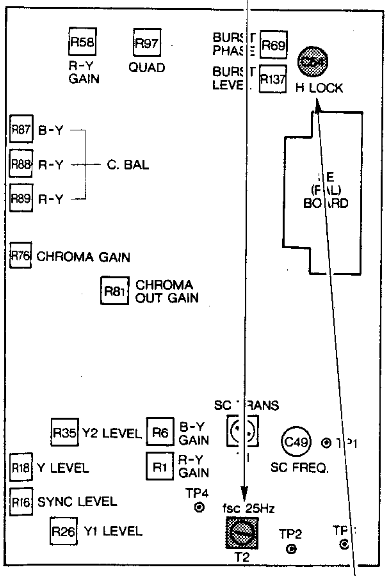
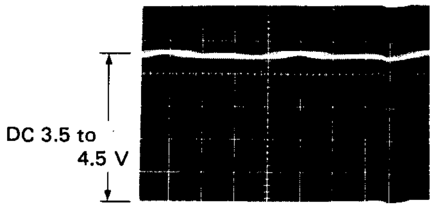
3.16-N ADJUSTMENT OF SSG (Adjustment of external gen-locking) : NTSC

Notes:
- This adjustment should be performed after the adjustment of the previous section 3.15 was completed.
- Supply V.B.S. or B.B. signal to the GENLOCK INPUT terminal of the camera adapter on the rear.

1	SC lock	Oscilloscope (V-rate)  GL board	◎ TP1 [SE board] ⦶ SC LOCK (R29)[GL board] ☆ Minimum jittering	1) Adjust R29 to minimize jittering. 
2	H. Lock	Oscilloscope (H-rate; DC range)  TP1 R36 Y2 LEVEL TP1 C42 SC FREQ TP6 TP3 T1 SC TRANS TP4 R89 R88 R80 C50 H.LOCK TP2 R110 BURST LEVEL SE (NTSC) BOARD R85 CHROMA GAIN TP5 TP2 R7 R94 QUAD PHASE INT SC COARSE R2 R128 INT SC FINE R27 Y1 LEVEL R73 BURST PHASE R19 R121 R-Y GAIN R16	◎ TP2 [SE board] ⦶ H. LOCK (C50)[SE board] ☆ Minimum jittering	2) Adjust C50 to obtain minimized jittering at TP2. 

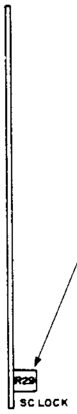
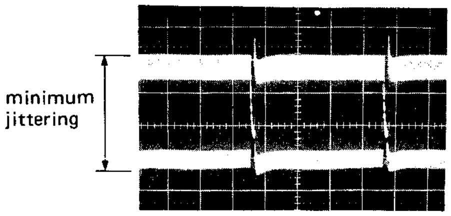
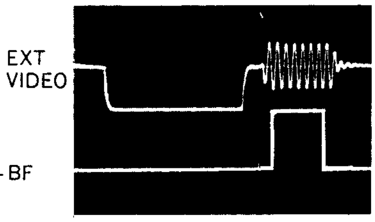
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure

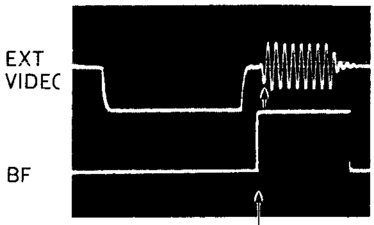
3.15-P ADJUSTMENT OF SPG (Adjustment of internal sync. signal) : PAL

1	SC frequency	Frequency counter Oscilloscope  SC TRANS R35 Y2 LEVEL R6 B-Y GAIN C49 TP1 R18 Y LEVEL R1 R-Y GAIN T1 SC FREQ. R16 SYNC LEVEL TP4 fsc 25Hz R26 Y1 LEVEL TP2 TP3 T2	SE board → Use the Extension board for it. ◎ IC13 pin 8 ⏀ SC FREQ (C49) [SE board] ☆ 4.433619 MHz ± 10 Hz ◎ TP17 [Extension board] ⏀ SC TRANS (T1) [SE board] ☆ Maximum amplitude	- Warm up the camera with the lens iris closed for more than 15 minutes. - Frequency counter with: (1) Display of 8 figures or more (2) Stability of over 0.1 ppm (or 1 x 10^{-7}) at 0°C ~ +40°C. 1) Adjust C49 to obtain the specified frequency. 2) Set T1 for the maximum output level.
2	Internal fsc-25 Hz lock	Oscilloscope  R58 R-Y GAIN R97 QUAD BURST PHASE R69 BURST LEVEL R137 C54 H LOCK R87 B-Y R88 R-Y R89 R-Y C. BAL SE (PAL) BOARD R76 CHROMA GAIN R81 CHROMA OUT GAIN SC TRANS R35 Y2 LEVEL R6 B-Y GAIN C49 TP1 R18 Y LEVEL R1 R-Y GAIN SC FREQ. R16 SYNC LEVEL TP4 fsc 25Hz R26 Y1 LEVEL TP2 TP3 T2	◎ TP4 [SE board] ⏀ fsc 25 Hz (T2) [SE board] ☆ Maximum amplitude	1) Set T2 for the maximum output level.
3	282 fH lock		◎ TP2 [SE board] ⏀ H. LOCK (C54) [SE board] ☆ 3.5 to 4.5 V DC & Minimum jittering	2) Adjust C54 to obtain 3.5 to 4.5V DC with minimized jittering at TP2. 

3.16-P ADJUSTMENT OF SPG (Adjustment of external gen-locking) : PAL

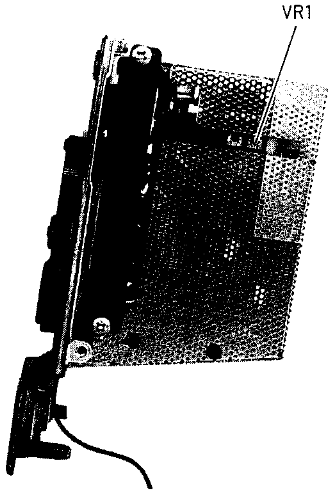
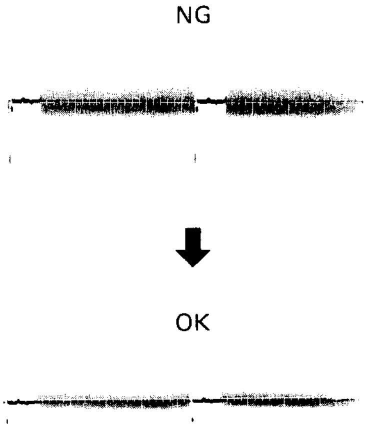
Note:
- This adjustment should be performed after the adjustment of the previous section 3.15-P was completed.
- Supply V.B.S. or B.B. signal to the GENLOCK INPUT terminal of the camera adapter on the rear.

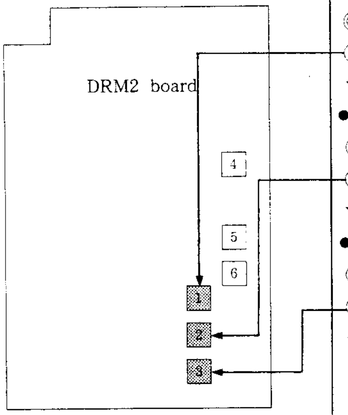
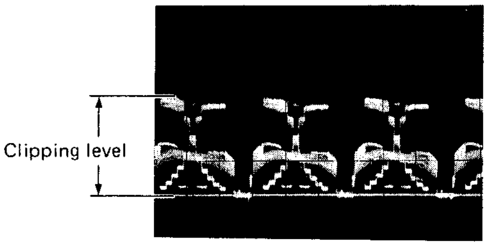
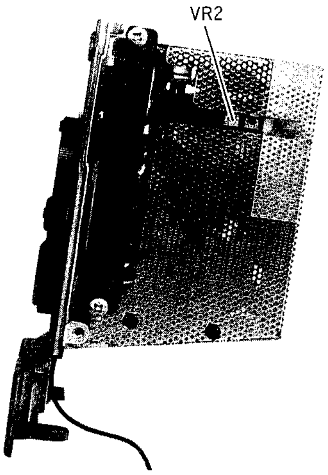
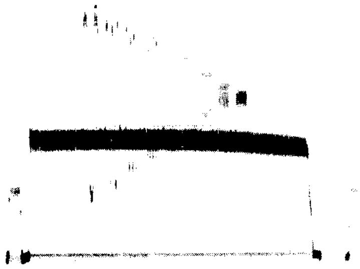
No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure
1	SC lock	Oscilliscope (V-rate)  GL board	GL board → Use the Extension board for it ◎ TP24 [Extension board] ⦶ SC LOCK (R29) [GL board] ☆ Minimum jittering	1) Adjust R29 to minimize jittering. 
2	Burst Timing	Oscilloscope: (H-rate)	GL board Use the extersion board for it. ◎ TP-29 [Extension board] (EXT VIDEO IN) ◎ IC7-8pin side [GL] (BFP) ⦶ Burst timing [GL] R24 ☆ Set the center of BF timing to the center of Burst signal.	1) Connect to oscilloscope A-ch. 2) Connect to oscilloscope B-ch. 

No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (⌽) Adjustment level (☆)	Adjustment procedure
3	Burst Timing	Oscilloscope: (H-rate)	GL board Use the extersion board for it. ◎ TP-29 [Extension board] (EXT VIDEO IN) ◎ R36 (IC7-8pin side) [GL] (BFP) ⌽ Burst timing [GL] R24 ☆ Set the BF timing to the Burst stert position.	1) Connect to oscilloscope A-ch. 2) Connect to oscilloscope B-ch. 

3.17 ADJUSTMENT OF CCD DRIVER

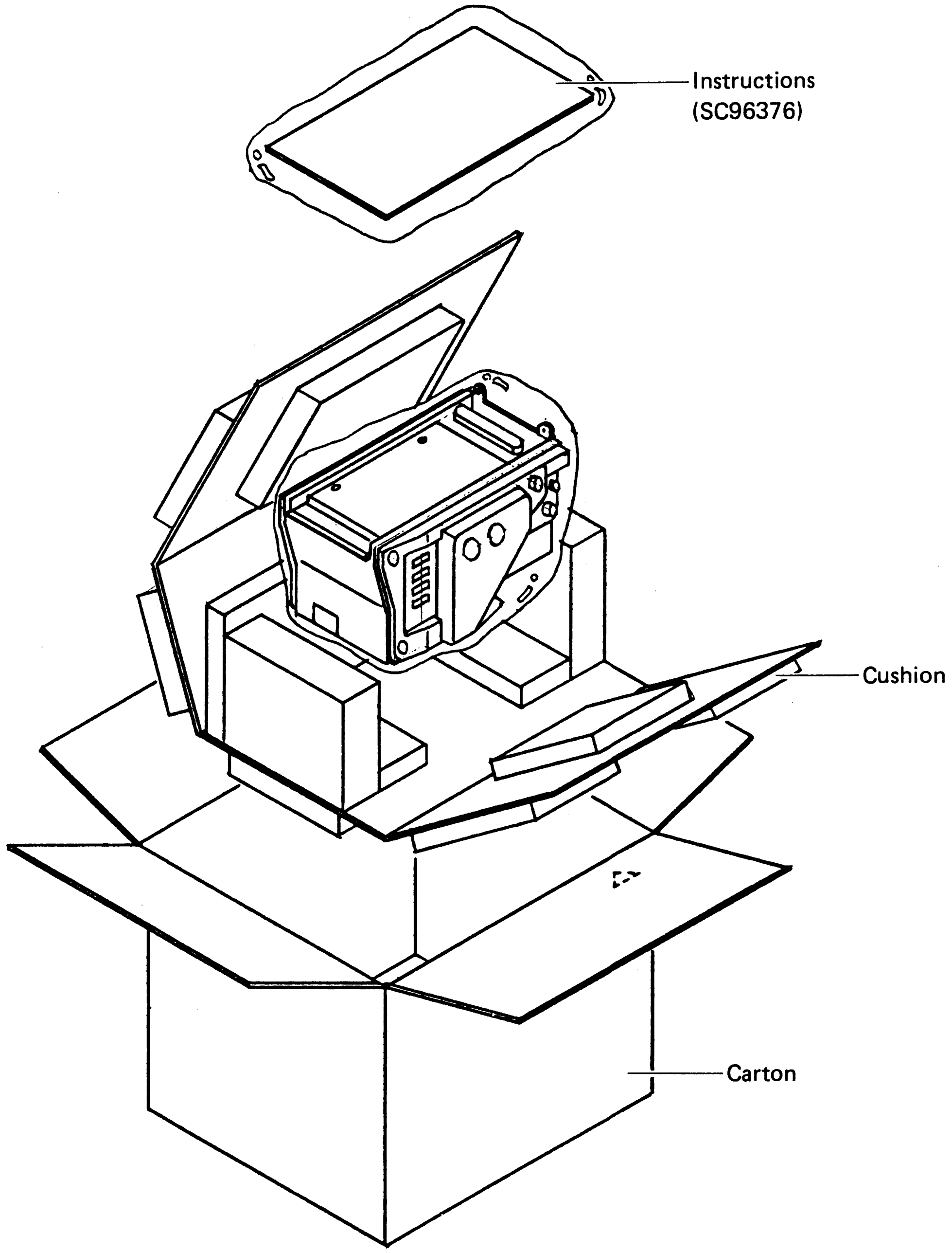
Note: • This adjustment is not required in general even when the optical block is replaced.
• The following is just a reference for correction off VR setting which is erroneously disturbed.

1	Sampling timing	Oscilloscope (H-rate, 10 : 1)	◎ TEST OUTPUT (with 75Ω termination) SAMPLE TIMING ⌽ [DRM1] (VR1) ☆ Minimum shading 	1) Close the lens with the cap. 2) Set the GAIN switch so that the camera sensitivity is 18 dB. 3) Change the set position of S2 on the CP board for the BLACK ADJUST mode. S2 → 1 : ON (CHECK switch) 2 : ON (CONTOUR switch) 4) Adjust VR1 to minimuze shading on B channel.  5) Change the S2's set position to the original position. S2 → 1 : OFF (CHECK switch) 2 : ON (CONTOUR switch)

No.	Item	Measuring instruments	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
2	V. sub bias (Blooming)	Gray scale chart ↓ Just scan Oscilloscope (H-rate, 10 : 1)  	◎ TEST OUTPUT (with 75 Ω termination) Ⓣ Lens iris ☆ NTSC : 0.714 Vp-p (white level of gray scale chart) PAL : 0.7 Vp-p (white level of gray scale chart) •B channel ◎ TP1 [PP] Ⓣ B. VSUB [DRM2] (VR1) ☆ 0.75 Vp-p (clipping level) •G channel ◎ TP2 [PP] Ⓣ G. VSUB [DRM2] (VR2) ☆ 1.2 Vp-p (clipping level) •R channel ◎ TP3 [PP] Ⓣ R. VSUB [DRM2] (VR3) ☆ 0.9 Vp-p (clipping level)	• Lens iris set to MANUAL. • Camera sensitivity set to 0 dB. 1) Pick up the gray scale chart. 2) Check the input signal level. When it is not the specified level, adjust the lens iris to obtain the specified value. 3) Open the lens iris. 4) Adjust clipping level of video signal to the specified level. 
3	Half pitch sampling timing	In-mega chart ↓ Just scan Oscilloscope (H-rate, 10 : 1)	◎ TEST OUTPUT (with 75 Ω termination) Ⓣ HP SHP TIMING [DRM1] (VR2)  	• Lens iris set to AUTO. • Contour correction → OFF 1) Pick up the in-mega chart. 2) Observing frequency response, adjust VR2 to obtain the best result in the high component. 

SECTION 4
REPACKING

4.1 CAMERA ADAPTER KA-20 REPACKING *

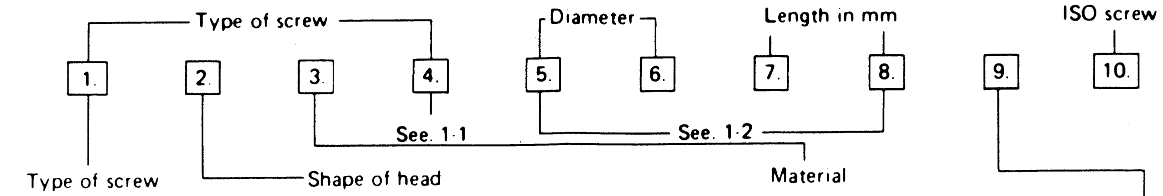


SECTION 5
EXPLODED VIEW AND PARTS LIST

Note: Replacing marked ⚠ parts, be sure to use parts specified for safety purposes.
In this exploded views the part number of the screws and washers designate the type and dimensions of those items.
The following examples will help you to decipher them.

5.1 STANDARD PART NUMBER CODING

5.1.1 Screw coding



Type of screw

S	Normal screw
N	Assembly screw
L	"
D	"
G	"
M	W. Wood screw
F	Feather screw
T	Setscrew
Y	"
B	Bolt
N	Nut
W	Washer
R	E·ring
E	–
P	Spring

Shape of head

P		Pan head
S		Flat countersunk head
H		Oval countersunk head
D		Binding head
R		Round head
B		Round head
T		Truss head

Material

Symbol letter	Material
S	Steel
E	Stainless steel
C	Cast iron
U	Bronze
B	Brass
P	Phosphor bronze
N	German silver
Y	Brass
A	Aluminum
Z	Zinc-alloy
K	Polycarbonate

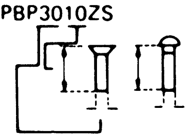
1·1 Type of screw

P	Cross-Recessed head screw
A	Tapping screw
B	Tapping screw
T	Tapping screw
E	Tapping screw

1·2 Diameter and Length of screw

– Example –

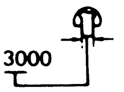
SPBP3010ZS



(Diameter x 10)

E-ring

Washer



REE3000

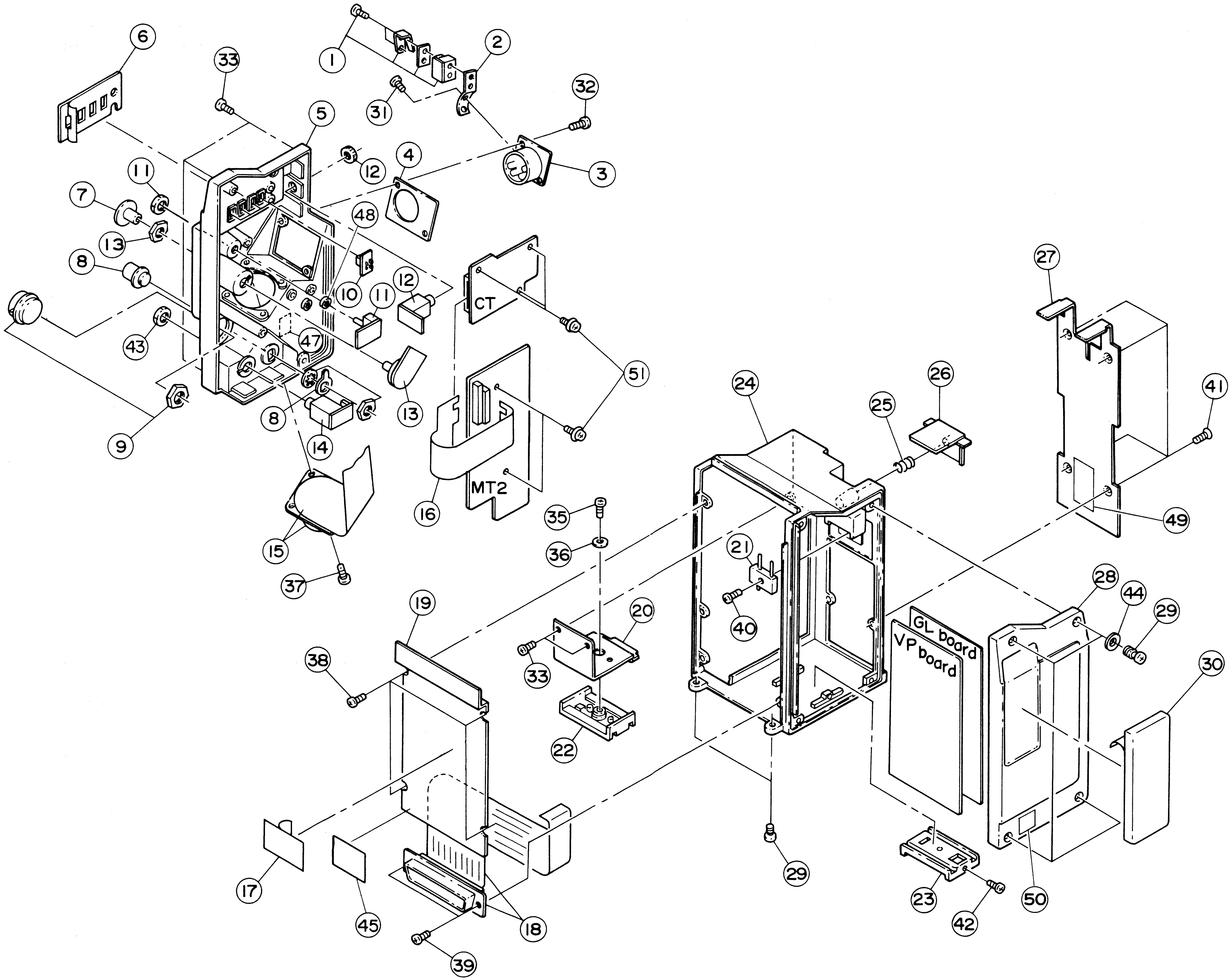
WNS3000N

Surface treatment

Symbol letter	Surface treatment
Z	Galvanization, dichromic acid treatment (MFZn2·C)
N	Nickel plating (MFNi2, MFNi1)
R	Chrome plating (MBCr2, MBCr1)
G	Silver plating (SP4)
W	Nichrome platings
P	Phosphite treatment
B	Bronze plating
M	Black coloring after galvanization
A	Red coloring after galvanization
C	Blue coloring after galvanization
T	Green coloring after galvanization
V	Violet coloring after galvanization
F	Iron with black coloring

5.2 EXPLODED VIEW AND PARTS LIST

5.2.1 CAMERA ADAPTER (KA-20) assembly $\boxed{M}\boxed{2}$



6
33
1
2
31
32
5
12
4
3
11
7
13
48
8
10
11
12
CT
43
47
13
9
8
14
51
16
MT2
15
37
27
24
26
25
41
49
35
36
21
40
19
38
20
33
22
GL board
VP board
28
44
29
30
17
45
18
39
29
23
42
50

– CAMERA HEAD (KY-17 FIT) assembly parts list –

M1MM□□□□

Symbol No.	Part No.	Part Name	Description
1	SCV0238-06S	Connector	MIC (6 P) J8
2	SCV0238-08S	Connector	LENS J1
3	SC30374-041	Shoe	
4	PU48567-001	BNC Connector	Nut included
5	SC20332-002	Connector Cover	
6	SC43431-011	Knob	
7	SC31033-001	Bracket	
8	SCV0316-03S	XLR-3 Connector	MIC (3 P)
9	SC43398-006	Rubber	
10	SCV0255-001	Slide Switch	S8 (AUX ON/OFF), S9 (STEREO↔MONO)
11	TLR102A	LED	LD 2 (SHUTTER)
12	SCV1639-001	Push Switch	S3 (DISP SELECT), S6 (VTR), S7 (AUTO SET), S10 (SHUTTER ON/OFF), S11 (SHUTTER MODE), S12 (ZEBRA)
13	–	–	
14	SC30988-012	Base	
15	Not Available	Serial No. Plate	31021
16	SC20307-002	Top Frame	
17	SC43451-001	LED LENS	
18	SC43406-001	Cap	
19	SC43528-011	Bracket	
20	SC43407-001	Bracket	
21	SCV0238-06S	Connector	VF
22	SC30989-002	Upper Rail	
23	SC43948-001	Label	U version
	PU54392-1	Label	E version
24	Not Available	JVC Logo Mark	PGD30011-1
25	SC20314-041	L. Side Cover	
26	SC43398-007	Rubber	
27	–	–	
28	SC43398-002	Rubber	
29	SC43398-006	Rubber	
30	SC30989-001	Lower Rail	
31	SC43651-001	Stud	
32	SC20309-001	Rear Frame	
33	SC41957-012	Caution Label	U version
34	SCV1277-003	Flexible Wire Assy	
35	SC10070-003	Bottom Frame	
36	SCV1388-001	Mica Sheat	
⚠ 37	TA7805S	IC	
38	2SB856(C)	Transistor	
39	SCV1664-026	Spacer	
40	SC43401-001	Cover	
41	SC43529-001	Bracket	
42	SC43403-001	Knob	
43	SC30987-011	Switch Cover	
44	SCV1313-001	Toggel Switch	S1 (OPERATE)
45	SC43404-002	Switch Panel	
46	SC43405-011	Switch Panel	
47	SC41214-003	Knob	
48	SC43408-011	Shield Plate	E version
49	SC43398-002	Rubber	
50	SC43398-003	Rubber	
51	SC43398-008	Rubber	
52	SC43659-011	Label	VR Location
53	SC20399-011	R. Side Cover	
54	SC41566-004	Label	Filter disc
55	SC44253-002	Pad	
56	SC43658-001	Label	U version
	PU54392-1	Label	E version
57	SCV0389-011	Slide Switch	S2 (HI-SENS), S4 (BARS), S5 (W. BAL)
58	SLB-26UR5	LED	LD 1 (POWER)
59	SC43656-085	Spacer	
60	SC43654-002	Label	VR Location
61	SC41702-006	Sheet	
62	SCM0643-N0A	Optical Block Ass'y	(64), (65), (66), (95) included (for U version)
	SCM0643-P0A	Optical Block Ass'y	(64), (65), (66), (95) included (for E version)
63	SDSP3006M	Screw	M3 x 6
64	SC31231-003	Shield Cover	
65	SC43855-001	Lever	
66	SSSP2604M	Screw	M2.6 × 4
67	SC44959-011	Stud	
68	–	–	
69	SC20308-002	Front Frame	
70	–	–	
71	SC31143-002	Filter Base	
72	SC43861-001	Filter Sheet	
73	SC43840-001	Filter	(1) 3200 K
74	SC43841-001	Filter	(2) 5600 K
75	SC43842-001	Filter	(3) 5600 K + 25% ND
76	SC31142-001	Filter Wheel	
77	SC40465-024	Steal Ball	
78	SC42441-001	Spring	
79	SC43875-001	Shaft	
80	–	E Ring –	
81	SC31151-001	Knob	
82	SC43422-011	Shaft	
83	SC43835-002	Gear	
84	SC43834-002	Filter Cover	
85	SDSP3006M	Screw	M3 × 6
86	LPSP3006Z	Screw	M3 × 6
87	SDSP3004N	Screw	M3 × 4
88	SPSP2606N	Screw	M2.6 × 6
89	SSSP3005M	Screw	M3 x 5
90	SC44178-018	Spring Nut	
91	SDSP3008M	Screw	M3 × 8
92	LPSP3006Z	Screw	M3 × 6
93	SC43397-002	Screw	
94	SDSP2606M	Screw	M2.6 × 6
95	LPSP3004Z	Screw	M3 x 4
96	LPSP2604Z	Screw	M2.6 x 6
97	SC45015-001	Bracket	
98	SC45016-001	Bracket	
99	Q03093-817	Washer	
100	SC43979-001	Spacer	
101	SPSK2050M	Screw	M2 × 5
102	–	–	
103	SC43650-011	Sheet	
104	–	–	
105	SC43825-002	Mount Cap	
106	–	–	
107	SC43199-002	Bearing	
108	–	–	
109	SC43974-001	Sheet	
110	SC43650-011	Sheet	
111	–	–	
112	Q03093-841	Washer	
113	SC44177-021	Label	Caution Label
114	SC44828-001	Switch Cap	VTR
115	SC43397-002	Screw	
116	SC44826-001	Shield Plate	
117	LPSP2606Z	Screw	M2.6 x 6
118	SC45065-001	Shield Sheet	for SE board (E version only)

– CARRYING HANDLE (KA-231) assembly parts list –

Symbol No.	Part No.	Part Name	Description
A1	SC44821-001	Screw	
A2	C40936	Spring	
A3	SC40886-001	Guide	
A4	SC20316-021	Handle	
A5	SSSP3006N	Screw	M3 x 6
A6	SC43390-001	Screw	
A7	SC44083-011	Cover	
A8	SDSP3004N	Screw	

– SHOULDER PAD (KA-220) assembly parts list –

Symbol No.	Part No.	Part Name	Description
B1	SSSP3006M	Screw	M3 × 6
B2	SC40928-001	Lock Ring	
B3	SC10067-002	Bottom Frame	
B4	SC43394-001	Rear Base	
B5	BYS3010M	Screw	M3 x 10
B6	SC20333-003	Shoulder Pad	
B7	SC43390-001	Screw	
B8	SC43390-002	Screw	
B9	SDSP4008R	Screw	M4 × 8
B10	SC43393-001	Front Base	

– CARRYING HANDLE (KA-232) assembly part list –

Symbol No.	Part No.	Part Name	Description
C1	SC44821-001	Screw	
C2	C40936	Spring	
C3	SC40886-001	Guide	
C4	SC20340-011	Handle	
C5	SSSP3006N	Screw	M3 x 6
C6	PU53202	Hook Holder	
C7	SC43390-001	Screw	
C8	SC31061-001	Handle Base	
C9	SC43532-001	Pin	
C10	YCS3004M	Screw	M3 x 4
C11	–	–	
C12	SC44083-011	Cover	
C13	SDSP3004N	Screw	

– CHEST REST (KA-111) assembly part list –

Symbol No.	Part No.	Part Name	Description
D1	SC20114-001	Pad Arm	
D2	SC40967-002	Gear	
D3	SC30387-002	Cushion	
D4	SC40973-001	Adjust Plate	
D5	SC40975-002	Lock Knob	
D6	SDSP3006M	Screw	M3 x 6
D7	SC40974-001	Spring Washer	
D8	SC40970-001	Lock Plate	
D9	SSSP3006N	Screw	M3 x 6

SECTION 6
CHARTS AND DIAGRAMS

SCHEMATIC DIAGRAM NOTES

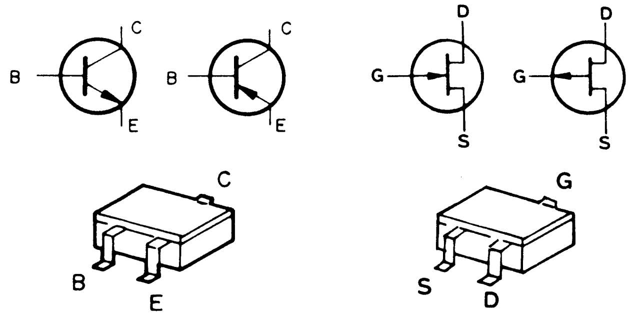
- **Schematic safety precaution**

▨ Parts are safety related aprts.
When replacing them, be sure to use the specified parts.

Voltage and waveform measurements.
Voltage: Measured with digital voltmeter in DC range; iris closed.
Waveform: Grey scale illuminated at more than 4000 lux at 3200 K lighting.

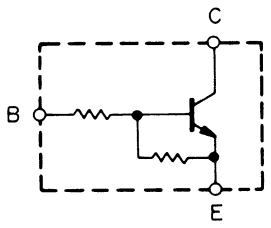
- **Chip transistors and FETs**

Transistors FETs

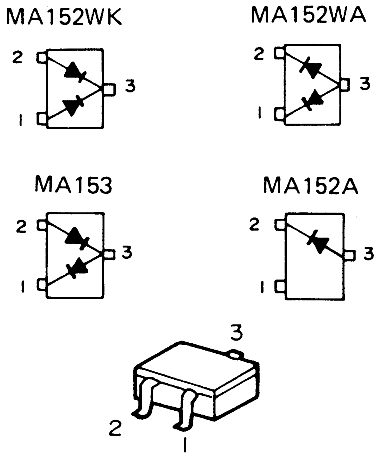


- **Digital Transistor**

DTC124K



- **Chip diodes**



REPLACING SUBMINIATURE "CHIP" PARTS

- Some resistors, shoring jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
- Soldering cautions:
  1) Do not apply heat for more than 3 seconds.
  2) Avoid using a rubbing stroke when soldering.
  3) Discard removed chips; do not reuse them.
  4) Supplementary cementing is not required.
  5) Use care not to scratch or otherwise damage the chips.
- Resistors and capacitors are not interchangeable with chip parts which is used in the color cameras BY-110, KY-210, etc., because of size difference. In case of part order, refer to the section "ELECTRICAL PARTS LIST".

TERMINAL LOGIC

Top bar of terminal name shows input or output logic.
Top bar shows, the control circuit become active at negative (low) logic input for example.

— CAMERA ADAPTER (KA-20) assembly parts list —

Symbol No.	Part No.	Part Name	Description
1	SCV0399-001	Actuator	
2	SC40752-004	Bracket	
⚠ 3	SCV0462-04P	XLR Connector	4 Pin J6 "DC INPUT"
4	SC43445-003	Plate	
5	SC10076-003	L. Side Cover	U version
	SC10076-004	L. Side Cover	E version
6	SC43513-021	Name Plate	U version
	SC43513-022	Name Plate	E version
7	SC43505-001	Knob	
8	SCV0749-011	BNC Connector	Nut included "GEN LOCK IN"
9	SCV1214-002	Connector	Nut included 7 Pin "Y/C 358(443) OUT"
10	SC43403-001	Knob	
11	SCV1298-001	Toggle Switch	S8 "POWER"
12	QMS3501-013	Jack	J9 "EARPHONE"
13	SCV0515-202	VR	R1 "INCOM LEVEL"
14	SCV0632-001	Jack	J8 "INCOM"
⚠ 15	SCV1279-002	Connector Assembly	FPC inclued 26Pin "VTR/RM"
16	SCV1280-001	FPC	
17	Not Available	Serial No. Plate	
⚠ 18	SCV1278-001	Connector Assembly	50 Pin FPC included
19	SC31054-001	Front Panel	
20	SC43530-001	Bracket	
⚠ 21	SCV0630-02P	Connector	2 Pin "DC IN"
⚠ 22	SC43503-002	Rail (Upper)	
⚠ 23	SC43503-001	Rail (Lower)	
24	SC10074-012	Frame	
25	SC41384-001	Spring	
⚠ 26	SC41385-001	Cover	
27	SC30515-003	Slide Base	
28	SC20339-002	R. Side Cover	
29	SC43397-002	Screw	
⚠ 30	SC43504-002	Pad	
	SC43828-001	Sheet	
31	SPBP2003N	Screw	M2 × 3
32	SPSP2606N	Screw	M2.6 x 6
33	SDSP3006R	Screw	M3 × 6
34	–	–	
35	SDSA2606Z	Screw	M2.6 × 6
36	Q03091-102	Washer	
37	SPSP3006N	Screw	M3 × 6
38	SDSP2604R	Screw	M2.6 x 4
39	SPSP2006N	Screw	M2 × 6
40	LPSP2610Z	Screw	M2.6 × 10
41	SSSP2606M	Screw	M2.6 × 6
42	SDSP2606M	Screw	M2.6 × 6
43	SC43628-001	Nut	
44	–	–	
45	SC41058-004	Caution Label	
46	–	–	
47	SC41957-012	Caution Label	U only
48	SC44026-001	Washer	
49	SC41252-001	Caution Label	U/E
50	SC43948-001	Caution Label	U only
51	LPSP3006Z	Screw	M3 x 6

SECTION 6
CHARTS AND DIAGRAMS

■ SCHEMATIC DIAGRAM NOTES

● Schematic safety precaution

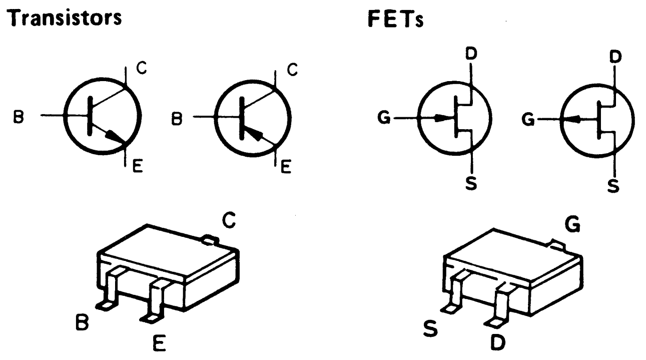
▨ Parts are safety related aprts.
When replacing them, be sure to use the specified parts.

Voltage and waveform measurements.

Voltage: Measured with digital voltmeter in DC range; iris closed.

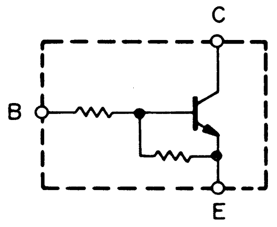
Waveform: Grey scale illuminated at more than 4000 lux at 3200 K lighting.

● Chip transistors and FETs

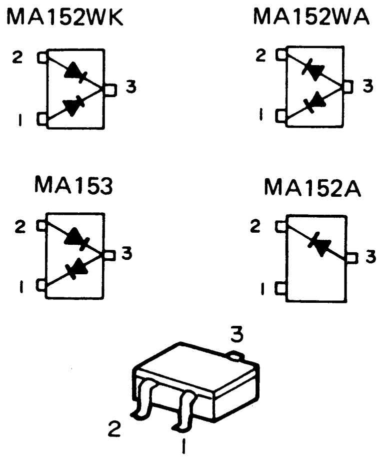


● Digital Transistor

DTC124K



● Chip diodes

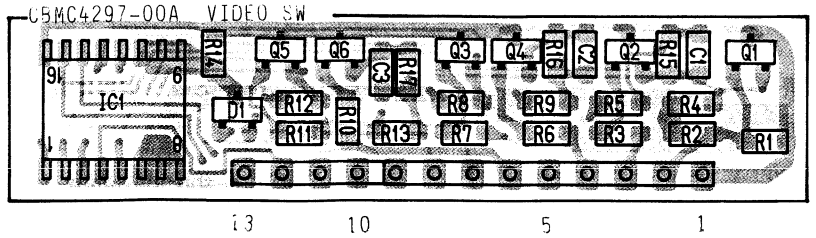


■ REPLACING SUBMINIATURE "CHIP" PARTS

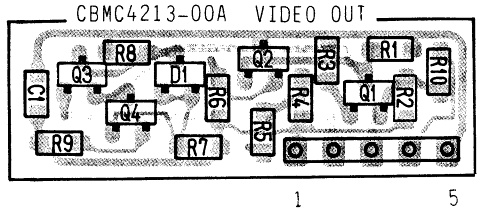
- Some resistors, shoring jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
- Soldering cautions:
  1) Do not apply heat for more than 3 seconds.
  2) Avoid using a rubbing stroke when soldering.
  3) Discard removed chips; do not reuse them.
  4) Supplementary cementing is not required.
  5) Use care not to scratch or otherwise damage the chips.
- Resistors and capacitors are not interchangeable with chip parts which is used in the color cameras BY-110, KY-210, etc., because of size difference. In case of part order, refer to the section "ELECTRICAL PARTS LIST".

6.1 VP CIRCUIT BOARDS

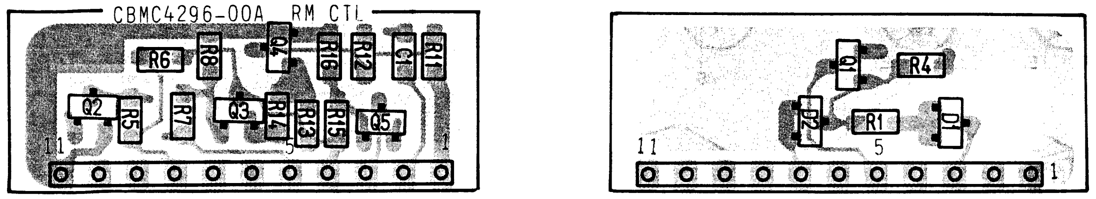
– VIDEO SW board (CBM1) [CBMC4297-00A] –


CBMC4297-00A VIDEO SW
IC1
Q1 Q2 Q3 Q4 Q5 Q6
D1
C1 C2 C3
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17
13
10
5
1

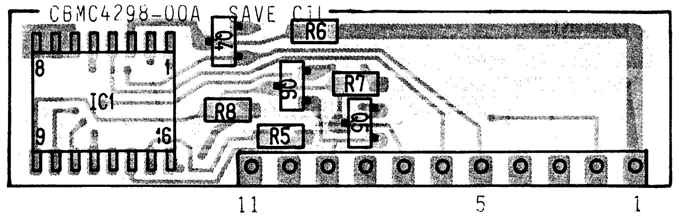
– VIDEO OUT board (CBM2/CBM3/CBM4) [CBMC4213-00A] –


CBMC4213-00A VIDEO OUT
C1
Q1 Q2 Q3 Q4
D1
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10
1
5

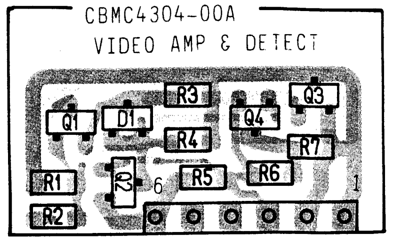
– RM CTL board (CBM5) [CBMC4296-00A] –


CBMC4296-00A RM CTL
Q1 Q2 Q3 Q4 Q5
D1 D2
R1 R2 R3 R4 R5 R6 R7 R8 R11 R12 R13 R14 R15 R16
C1
11
5
1

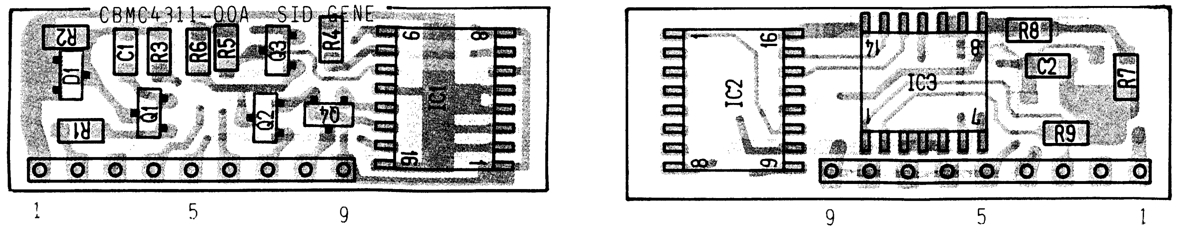
– SAVE CTL board (CBM6) [CBMC4298-00A] –


CBMC4298-00A SAVE CTL
IC1
Q4 Q5 Q6
R5 R6 R7 R8
11
5
1

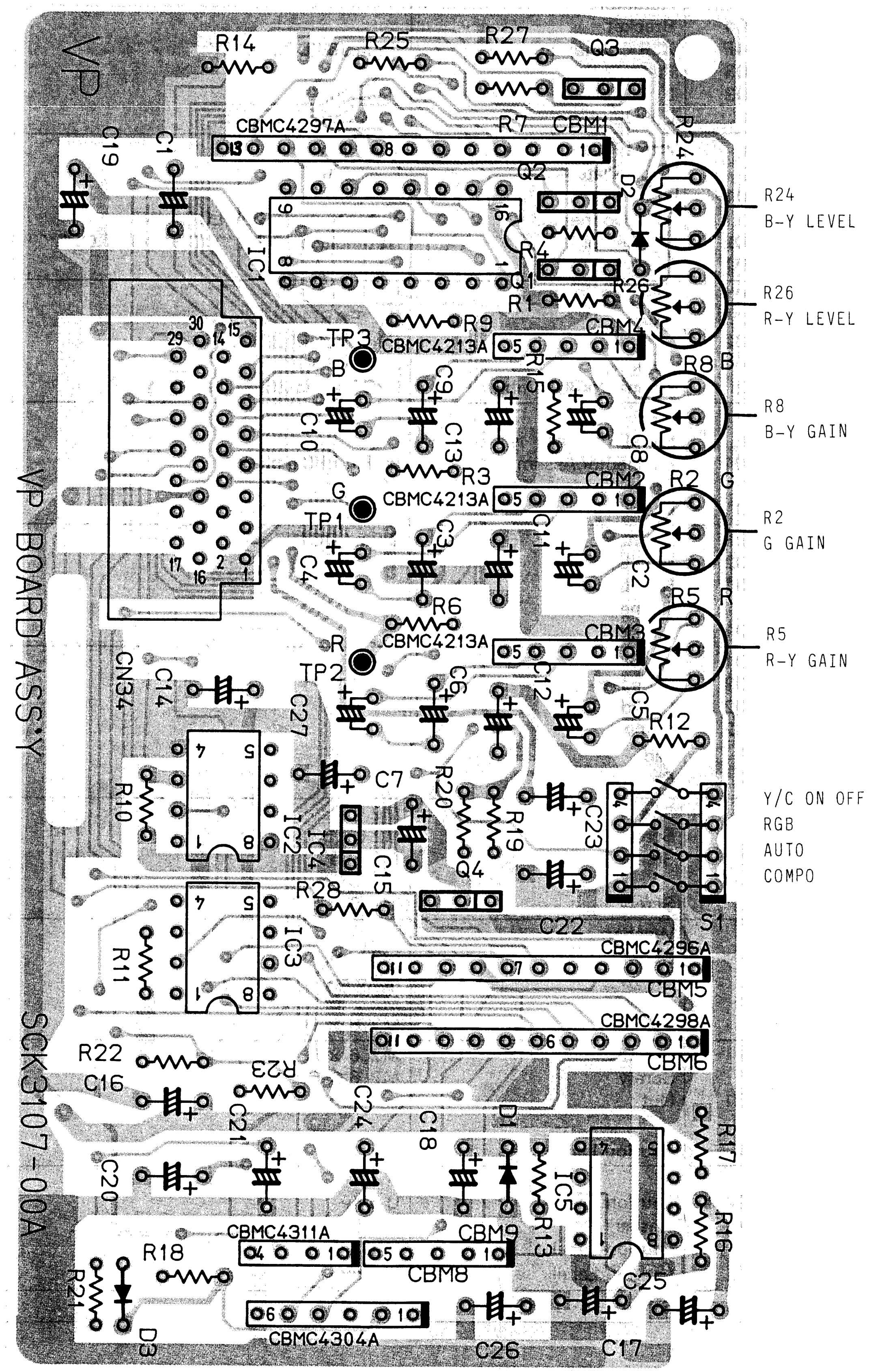
– VIDEO AMP & DETECT board (CBM8) [CBMC4304-00A] –


CBMC4304-00A
VIDEO AMP & DETECT
Q1 Q2 Q3 Q4
D1
R1 R2 R3 R4 R5 R6 R7
6
1

– SID GENE board (CBM9) [CBMC4311-00A] –

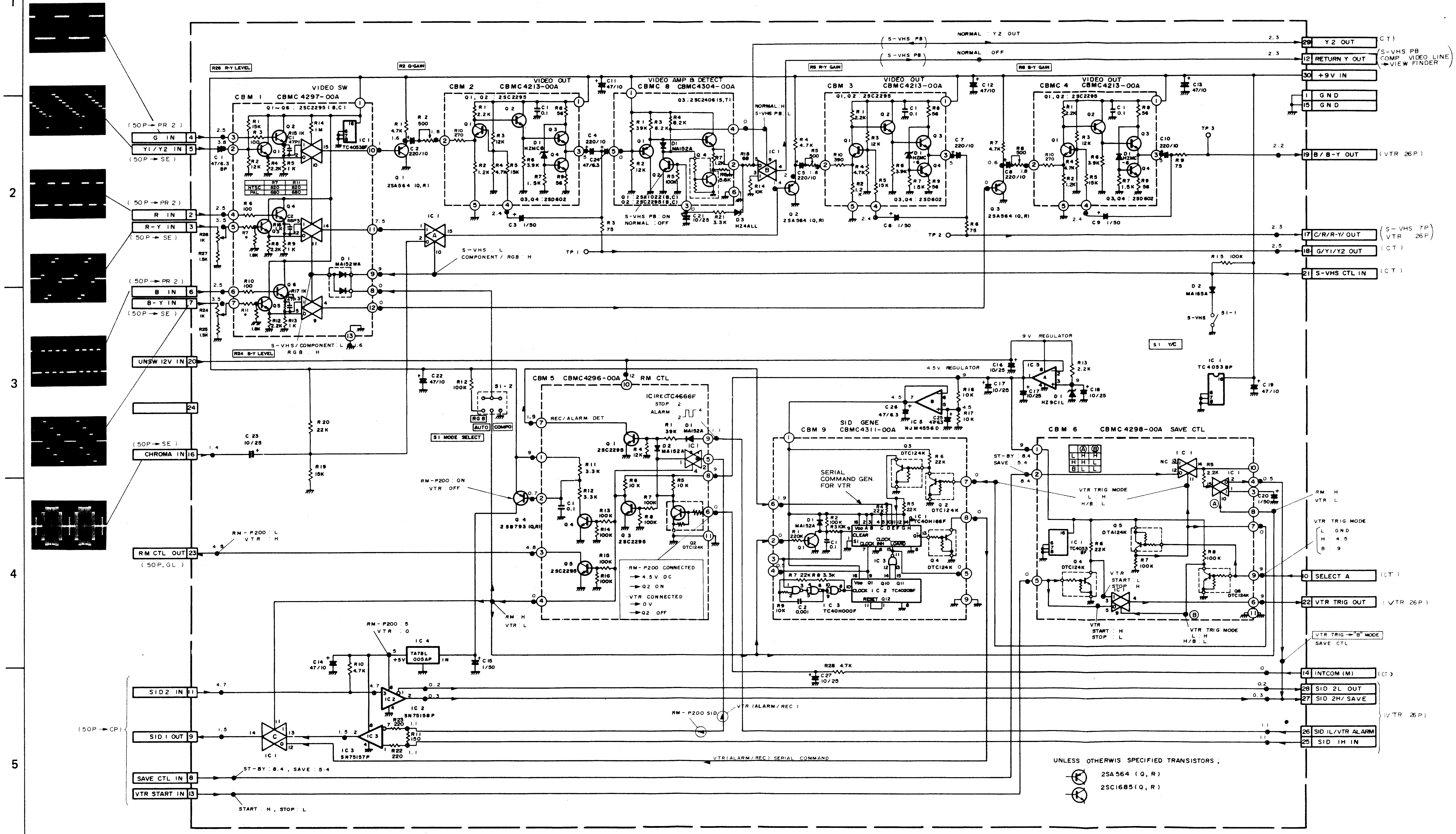

CBMC4311-00A SID GENE
IC1 IC2 IC3
Q1 Q2 Q3 Q4
D1
C1 C2
R1 R2 R3 R4 R5 R6 R7 R9
1
5
9

– VP board –


VP
VP BOARD ASS'Y
SCK3107-00A
CBMC4297A
CBM1
CBMC4213A
CBM2
CBM3
CBM4
CBMC4296A
CBM5
CBMC4298A
CBM6
CBMC4311A
CBM9
CBM8
CBMC4304A
CN34
IC1 IC2 IC3 IC4 IC5
Q1 Q2 Q3 Q4
D1 D2 D3
TP1
TP2
TP3
B
G
R
S1
R24
B-Y LEVEL
R26
R-Y LEVEL
R8
B-Y GAIN
R2
G GAIN
R5
R-Y GAIN
Y/C ON OFF
RGB
AUTO
COMPO

6.2 VP BOARD SCHEMATIC DIAGRAM

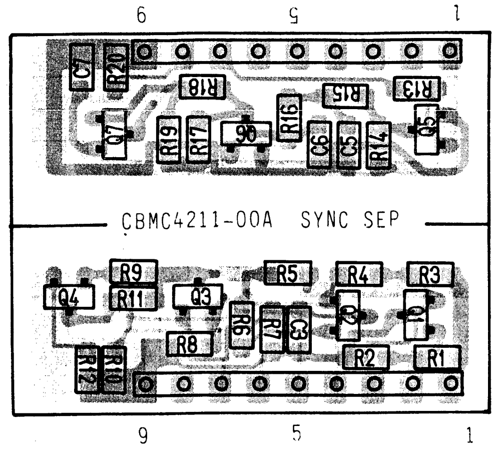
COLOR BARS: ON, H-rate


A
B
C
D
E
F
G
H
1
2
3
4
5
6
CBM 1 CBMC4297-00A VIDEO SW
CBM 2 CBMC4213-00A VIDEO OUT
CBM 8 CBMC4304-00A VIDEO AMP & DETECT
CBM 3 CBMC4213-00A VIDEO OUT
CBM 4 CBMC4213-00A VIDEO OUT
CBM 5 CBMC4296-00A RM CTL
CBM 9 CBMC4311-00A SID GENE
CBM 6 CBMC4298-00A SAVE CTL
R26 R-Y LEVEL
R2 G-GAIN
R5 R-Y GAIN
R8 B-Y GAIN
R24 B-Y LEVEL
S1 MODE SELECT
RGB
AUTO
COMPO
S1 Y/C
9V REGULATOR
4.5V REGULATOR
SERIAL COMMAND GEN. FOR VTR
(50P → PR 2)
G IN 4
Y1/Y2 IN 5
(50P → SE)
R IN 2
R-Y IN 3
B IN 6
B-Y IN 7
UNSW 12V IN 20
24
CHROMA IN 16
RM CTL OUT 23
(50P, GL)
SID2 IN 11
SID1 OUT 9
(50P → CP)
SAVE CTL IN 8
VTR START IN 13
29 Y2 OUT (CT)
12 RETURN Y OUT (S-VHS PB COMP. VIDEO LINE → VIEW FINDER)
30 +9V IN
1 GND
15 GND
19 B/B-Y OUT (VTR 26P)
17 C/R/R-Y/ OUT (S-VHS 7P) (VTR 26P)
18 G/Y1/Y2 OUT (CT)
21 S-VHS CTL IN (CT)
10 SELECT A (CT)
22 VTR TRIG OUT (VTR 26P)
14 INTCOM (M) (CT)
28 SID 2L OUT
27 SID 2H/SAVE
26 SID 1L/VTR ALARM
25 SID 1H IN
(VTR 26P)
S-VHS : L
COMPONENT / RGB : H
S-VHS/COMPONENT : L
RGB : H
NORMAL : Y2 OUT
NORMAL : OFF
S-VHS PB : ON
NORMAL : OFF
RM-P200 : ON
VTR : OFF
RM-P200 : L
VTR : H
RM : H
VTR : L
RM-P200 CONNECTED
→ 4.5V DC
→ Q2 ON
VTR CONNECTED
→ 0V
→ Q2 OFF
RM-P200 : 5
VTR : 0
ST-BY : 8.4, SAVE : 5.4
START : H, STOP : L
VTR TRIG MODE
L : H
H/B : L
VTR START : L
STOP : H
VTR TRIG → "B" MODE
SAVE CTL
VTR (ALARM/REC)
VTR (ALARM/REC) SERIAL COMMAND
RM-P200 SID
TP 1
TP 2
TP 3
IC 4 TA78L005AP
IC 2 SN75158P
IC 3 SN75157P
IC 6 NJM4556D
IC 1 TC4053BP
IC 5
UNLESS OTHERWIS SPECIFIED TRANSISTORS,
2SA564 (Q, R)
2SC1685 (Q, R)

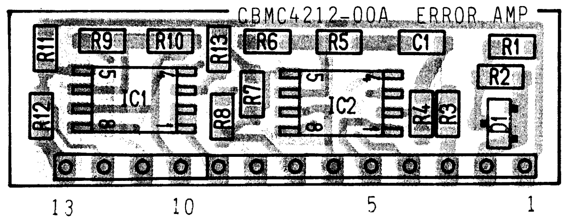
– REVISED APRIL 1989 –

6.3 GL CIRCUIT BAORDS

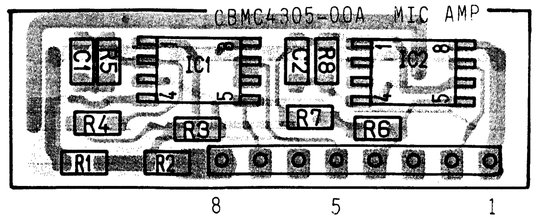
– SYNC SEP board (CBM1) [CBMC4211-00A] –


6
5
1
CBMC4211-00A SYNC SEP
9
5
1

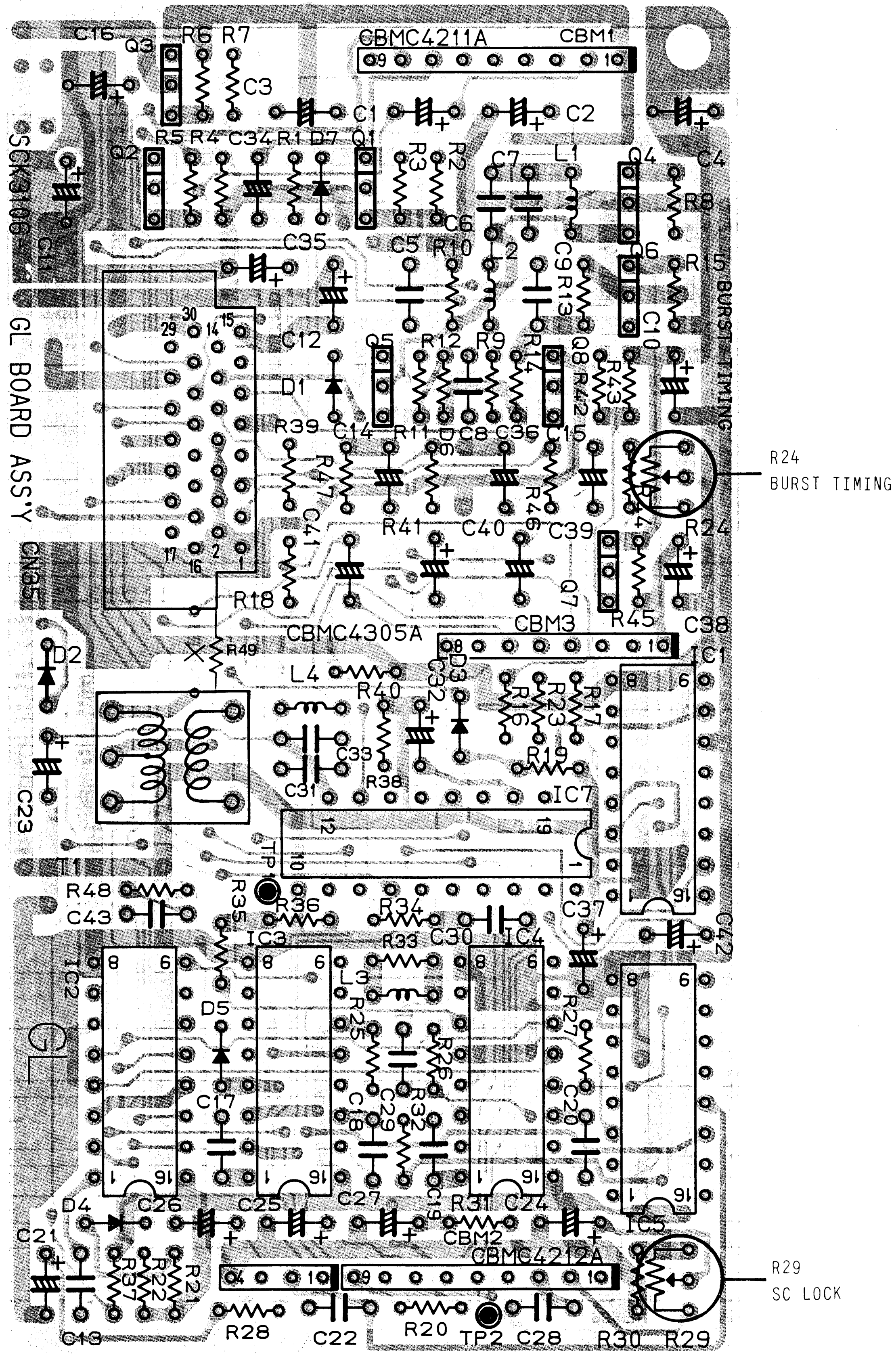
– ERROR AMP board (CBM2) [CBMC4212-00A] –


CBMC4212-00A ERROR AMP
IC1
IC2
13
10
5
1

– MIC AMP board (CBM3) [CBMC4305-00A] –


CBMC4305-00A MIC AMP
IC1
IC2
8
5
1

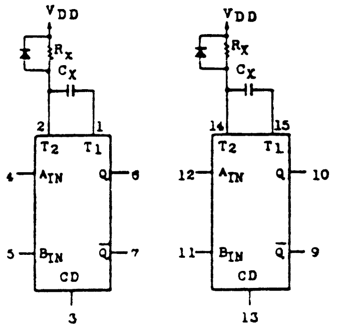
– GL board –


CBMC4211A
CBM1
SCK9106
GL BOARD ASS'Y
CN35
BURST TIMING
R24
BURST TIMING
CBMC4305A
CBM3
TP1
TP2
CBM2
CBMC4212A
R29
SC LOCK
GL

X : Cut off pattern

6.4 GL BOARD SCHEMATIC DIAGRAM

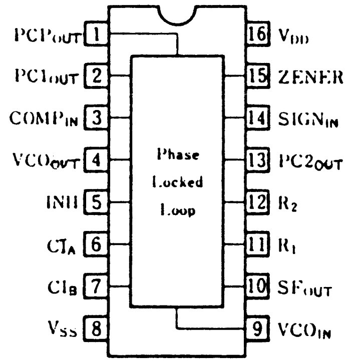
TC4528 DUAL MONO-MULTIVIBRATOR [TOSHIBA]

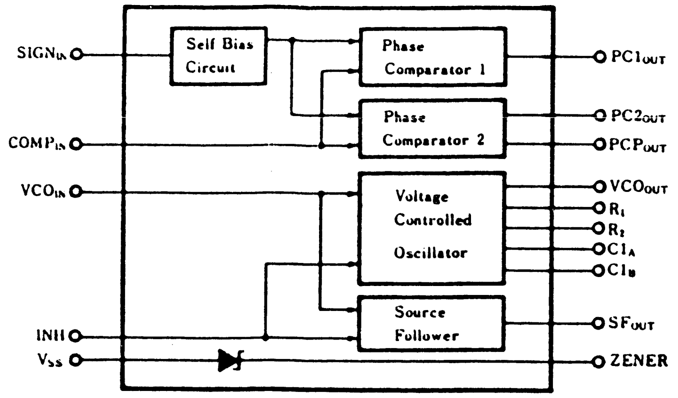

VDD
Rx
Cx
T2
T1
AIN
BIN
Q
CD
2
1
4
6
5
7
3
14
15
12
10
11
9
13

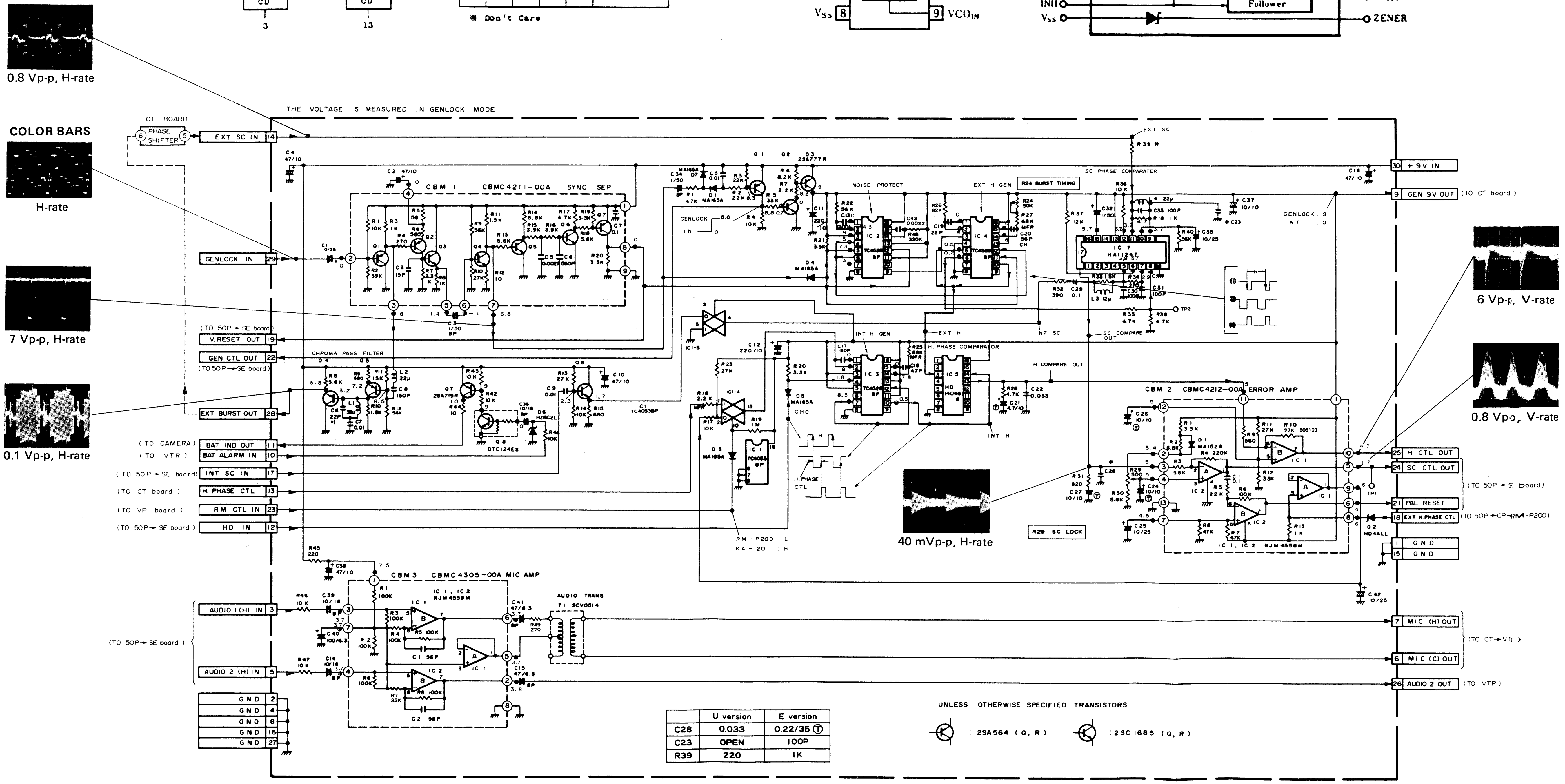
INPUT			OUTPUT		NOTE
A	B	CD	Q	$\bar{Q}$	
↑	H	H	⎍	⊔	OUTPUT PULSE
↑	L	H	L	H	INHIBIT
H	↓	H	L	H	INHIBIT
L	↓	H	⎍	⊔	OUTPUT PULSE
*	*	L	L	H	INHIBIT

* Don't Care

HD14046B PHASE LOCKED LOOP [HITACHI]

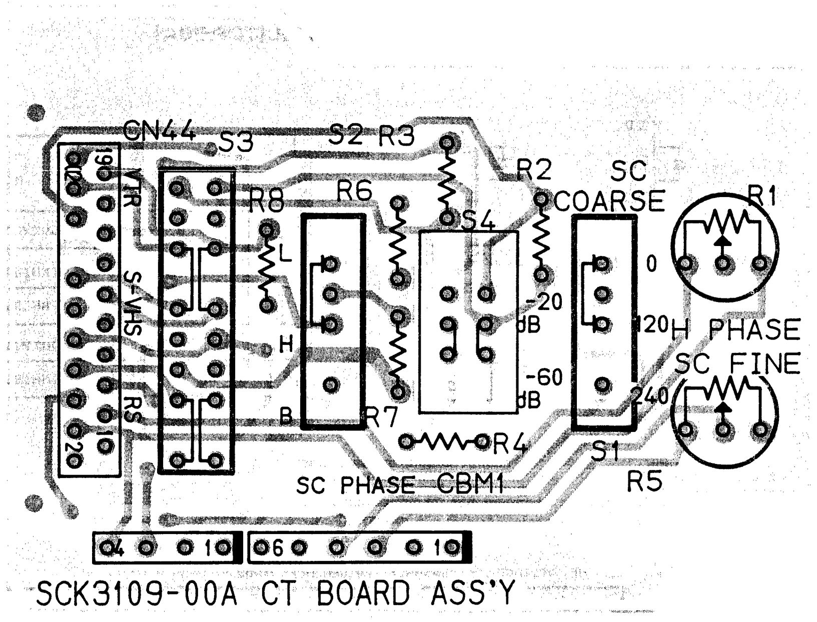

PCPOUT 1
PC1OUT 2
COMPIN 3
VCOOUT 4
INH 5
C1A 6
C1B 7
VSS 8
16 VDD
15 ZENER
14 SIGNIN
13 PC2OUT
12 R2
11 R1
10 SFOUT
9 VCOIN
Phase Locked Loop


SIGNIN
COMPIN
VCOIN
INH
VSS
Self Bias Circuit
Phase Comparator 1
Phase Comparator 2
Voltage Controlled Oscillator
Source Follower
PC1OUT
PC2OUT
PCPOUT
VCOOUT
R1
R2
C1A
C1B
SFOUT
ZENER

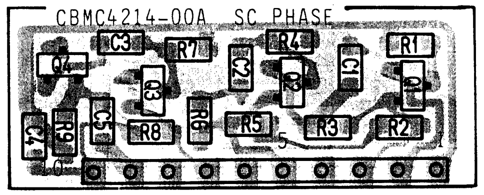

0.8 Vp-p, H-rate
COLOR BARS
H-rate
7 Vp-p, H-rate
0.1 Vp-p, H-rate
6 Vp-p, V-rate
0.8 Vp-p, V-rate
40 mVp-p, H-rate
THE VOLTAGE IS MEASURED IN GENLOCK MODE
CT BOARD
PHASE SHIFTER
EXT SC IN 14
GENLOCK IN 29
(TO 50P→SE board)
V.RESET OUT 19
GEN CTL OUT 22
(TO 50P→SE board)
EXT BURST OUT 28
(TO CAMERA) BAT IND OUT 11
(TO VTR) BAT ALARM IN 10
(TO 50P→SE board) INT SC IN 17
(TO CT board) H. PHASE CTL 13
(TO VP board) RM CTL IN 23
(TO 50P→SE board) HD IN 12
AUDIO 1 (H) IN 3
(TO 50P→SE board)
AUDIO 2 (H) IN 5
GND 2
GND 4
GND 8
GND 16
GND 27
CBM 1 CBMC4211-00A SYNC SEP
CHROMA PASS FILTER
CBM 3 CBMC4305-00A MIC AMP
IC 1, IC 2 NJM4558M
AUDIO TRANS T1 SCV0514
NOISE PROTECT
EXT H GEN
R24 BURST TIMING
SC PHASE COMPARATER
IC 7 HA11247
INT H GEN
H. PHASE COMPARATOR
H COMPARE OUT
EXT H
INT SC
SC COMPARE OUT
GENLOCK 9 INT 0
IC1 TC4053BP
H. PHASE CTL
RM-P200 : L
KA-20 : H
CBM 2 CBMC4212-00A ERROR AMP
IC 1, IC 2 NJM4558M
R29 SC LOCK
EXT SC
TP1
TP2
30 +9V IN
9 GEN 9V OUT (TO CT board)
25 H CTL OUT
24 SC CTL OUT
(TO 50P→SE board)
21 PAL RESET
18 EXT H.PHASE CTL (TO 50P→CP→RM-P200)
1 GND
15 GND
7 MIC (H) OUT
6 MIC (C) OUT
(TO CT→VTR)
26 AUDIO 2 OUT (TO VTR)
UNLESS OTHERWISE SPECIFIED TRANSISTORS
: 2SA564 (Q, R)
: 2SC1685 (Q, R)

	U version	E version
C28	0.033	0.22/35 Ⓣ
C23	OPEN	100P
R39	220	1K

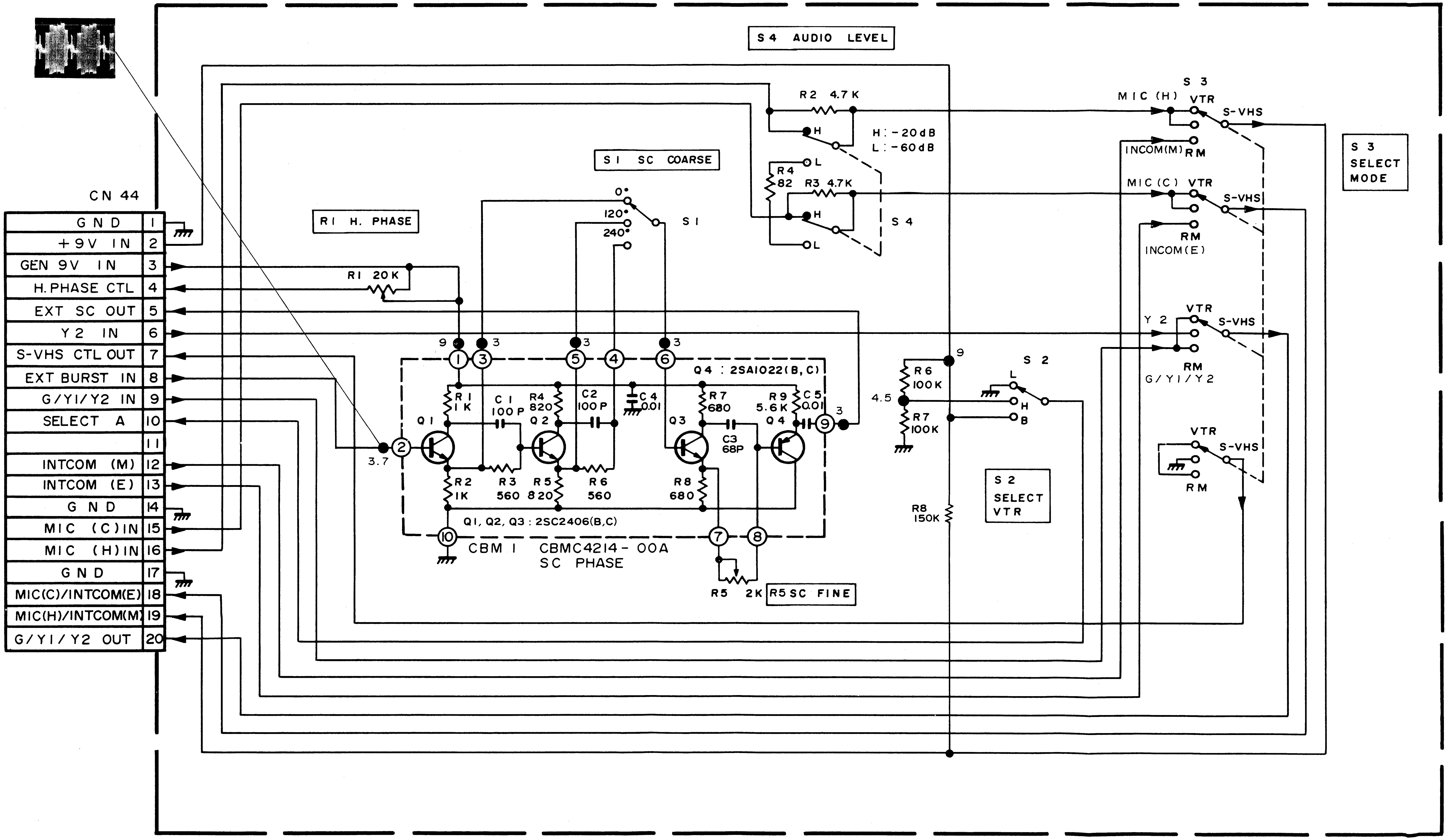
6.5 CT CIRCUIT BOARD


CN44
S3
S2
R3
R2
SC
COARSE
R1
R8
R6
S4
L
H
B
VTR
S-VHS
RS
19
20
0
-20
dB
-60
dB
120
240
H PHASE
SC FINE
R7
R4
S1
R5
SC PHASE CBM1
4
1
6
1
SCK3109-00A CT BOARD ASS'Y

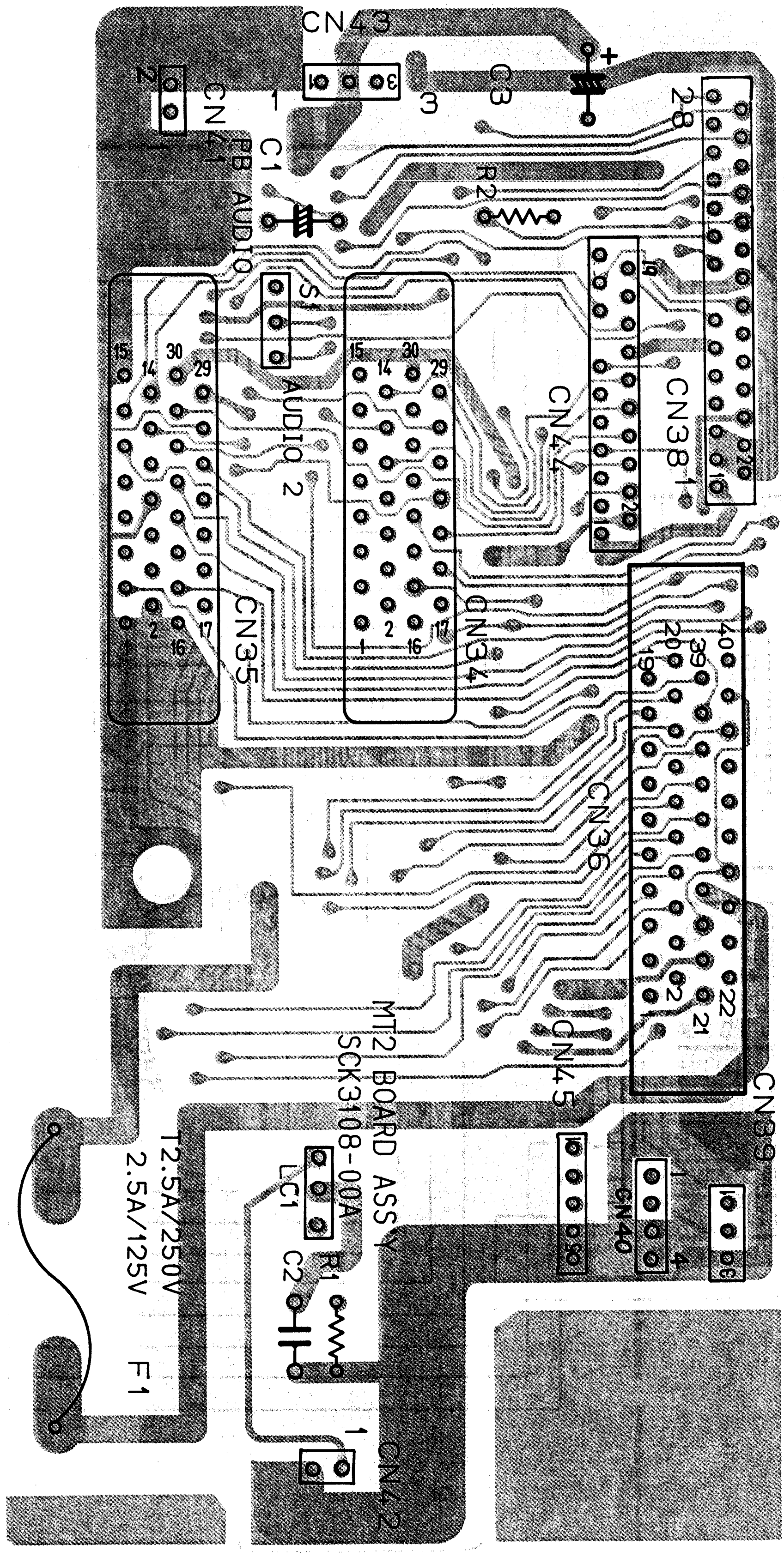
– SC PHASE board (CBM1) [CBMC4214-00A] –


CBMC4214-00A SC PHASE
C3
R7
R4
R1
Q4
Q3
C2
Q2
C1
Q1
C4
R9
C5
R8
R6
R5
R3
R2
5

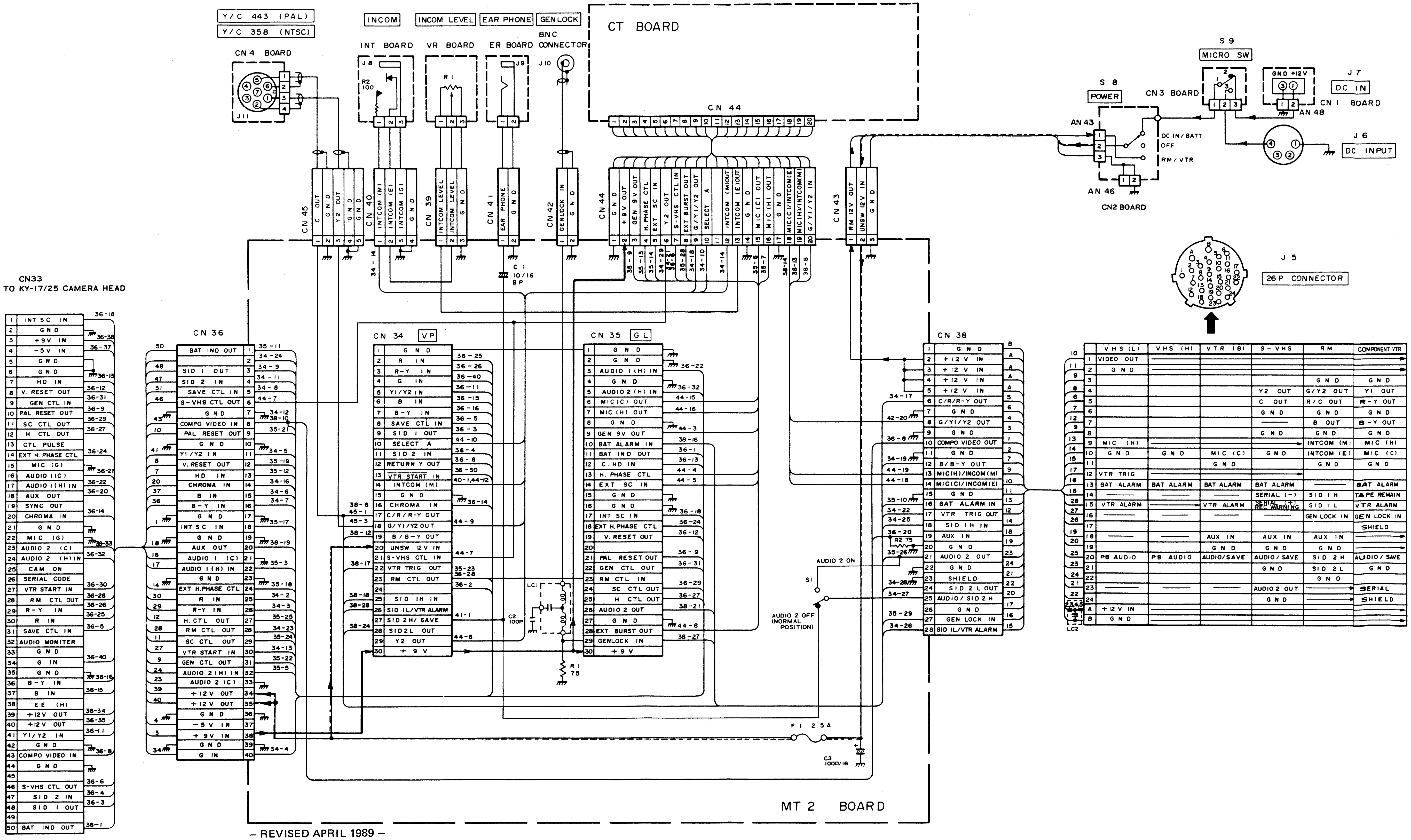
6.6 CT BOARD SCHEMATIC DIAGRAM


CN 44
GND 1
+9V IN 2
GEN 9V IN 3
H.PHASE CTL 4
EXT SC OUT 5
Y2 IN 6
S-VHS CTL OUT 7
EXT BURST IN 8
G/YI/Y2 IN 9
SELECT A 10
11
INTCOM (M) 12
INTCOM (E) 13
GND 14
MIC (C)IN 15
MIC (H)IN 16
GND 17
MIC(C)/INTCOM(E) 18
MIC(H)/INTCOM(M) 19
G/YI/Y2 OUT 20
RI H. PHASE
RI 20K
SI SC COARSE
0°
120°
240°
SI
S4 AUDIO LEVEL
R2 4.7K
H
H : -20dB
L : -60dB
L
R4 82
R3 4.7K
H
L
S4
9
3
3
3
Q4 : 2SA1022(B,C)
RI IK
CI 100P
R4 820
C2 100P
C4 0.01
R7 680
R9 5.6K
C5 0.01
3
QI
Q2
Q3
Q4
3.7
C3 68P
R2 IK
R3 560
R5 820
R6 560
R8 680
QI, Q2, Q3 : 2SC2406(B,C)
CBM I CBMC4214-00A
SC PHASE
R5 2K
R5 SC FINE
9
R6 100K
4.5
R7 100K
R8 150K
S2
L
H
B
S2 SELECT VTR
S3
MIC (H)
VTR
S-VHS
INCOM(M)
RM
S3 SELECT MODE
MIC (C)
VTR
S-VHS
RM
INCOM(E)
Y2
VTR
S-VHS
RM
G/YI/Y2
VTR
S-VHS
RM

6.7 MT2 CIRCUIT BOARD


CN43
1
3
2
CN41
C1
PB AUDIO
C3
+
R2
28
1
CN38
19
1
20
CN44
SJ
AUDIO 2
15
30
14
29
1
2
16
17
CN35
CN34
40
39
20
19
CN36
2
1
22
21
CN39
CN45
CN40
4
MT2 BOARD ASSY
SCK3108-00A
LC1
R1
C2
T2.5A/250V
2.5A/125V
F1
CN42

6.8 CAMERA ADAPTER OVERALL


A
B
C
D
E
F
G
H
1
2
3
4
5
6
Y/C 443 (PAL)
Y/C 358 (NTSC)
CN 4 BOARD
J11
INCOM
INT BOARD
J8
R2 100
INCOM LEVEL
VR BOARD
R1
EAR PHONE
ER BOARD
J9
GEN LOCK
BNC CONNECTOR
J10
CT BOARD
CN 44
S 9
MICRO SW
S 8
POWER
CN3 BOARD
AN 43
DC IN/BATT
OFF
RM/VTR
AN 46
CN2 BOARD
GND +12V
J 7
DC IN
CN 1 BOARD
AN 48
J 6
DC INPUT
J 5
26P CONNECTOR
CN 45
C OUT
G N D
Y2 OUT
G N D
G N D
CN 40
INTCOM (M)
INTCOM (E)
INTCOM (G)
CN 39
INTCOM LEVEL
INTCOM LEVEL
G N D
CN 41
EAR PHONE
G N D
CN 42
GENLOCK IN
G N D
CN 44
G N D
+9V OUT
GEN 9V OUT
H.PHASE CTL
EXT SC IN
Y2 OUT
S-VHS CTL IN
EXT BURST OUT
G/Y1/Y2 IN
SELECT A
G N D
INTCOM (M)OUT
INTCOM (E)OUT
G N D
MIC (C) OUT
MIC (H) OUT
G N D
MIC(C)/INTCOM(E)
MIC(H)/INTCOM(M)
G/Y1/Y2 IN
CN 43
RM 12V OUT
UNSW 12V IN
G N D
C1 10/16 BP
CN33
TO KY-17/25 CAMERA HEAD
1 INT SC IN
2 G N D
3 +9V IN
4 −5V IN
5 G N D
6 G N D
7 HD IN
8 V. RESET OUT
9 GEN CTL IN
10 PAL RESET OUT
11 SC CTL OUT
12 H CTL OUT
13 CTL PULSE
14 EXT. H. PHASE CTL
15 MIC (G)
16 AUDIO 1 (C)
17 AUDIO 1 (H) IN
18 AUX OUT
19 SYNC OUT
20 CHROMA IN
21 G N D
22 MIC (G)
23 AUDIO 2 (C)
24 AUDIO 2 (H) IN
25 CAM ON
26 SERIAL CODE
27 VTR START IN
28 RM CTL OUT
29 R−Y IN
30 R IN
31 SAVE CTL IN
32 AUDIO MONITER
33 G N D
34 G IN
35 G N D
36 B−Y IN
37 B IN
38 EE (H)
39 +12V OUT
40 +12V OUT
41 Y1/Y2 IN
42 G N D
43 COMPO VIDEO IN
44 G N D
45
46 S-VHS CTL OUT
47 SID 2 IN
48 SID 1 OUT
49
50 BAT IND OUT
CN 36
CN 34 VP
CN 35 GL
CN 38
LC1
C2 100P
R1 75
R2 75
AUDIO 2 ON
S1
AUDIO 2 OFF (NORMAL POSITION)
F1 2.5A
C3 1000/16
LC2
MT 2 BOARD

		VHS (L)	VHS (H)	VTR (B)	S−VHS	RM	COMPONENT VTR
10	1	VIDEO OUT	→	→	→	→	→
11	2	GND	→	→	→	→	→
9	3					GND	GND
8	4				Y2 OUT	G/Y2 OUT	Y1 OUT
6	5				C OUT	R/C OUT	R−Y OUT
7	6				GND	GND	GND
12	7				—	B OUT	B−Y OUT
9	8				GND	GND	GND
13	9	MIC (H)	→	→	→	INTCOM (M)	MIC (H)
14	10	GND	GND	MIC (C)	GND	INTCOM (E)	MIC (C)
15	11			GND		GND	GND
17	12	VTR TRIG	→	→	→		
16	13	BAT ALARM	BAT ALARM	BAT ALARM	BAT ALARM	—	BAT ALARM
18	14	—	—	—	SERIAL (−)	SID 1 H	TAPE REMAIN
28	15	VTR ALARM	→	VTR ALARM	SERIAL (+) REC WARNING	SID 1 L	VTR ALARM
27	16	—	—	—	—	GEN LOCK IN	GEN LOCK IN
26	17						SHIELD
19	18	—	—	AUX IN	AUX IN	AUX IN	→
20	19			GND	GND	GND	→
25	20	PB AUDIO	PB AUDIO	AUDIO/SAVE	AUDIO/SAVE	SID 2 H	AUDIO/SAVE
23	21				GND	SID 2 L	GND
24	22					GND	
21	23	—	—	—	AUDIO 2 OUT	→	SERIAL
22	24				GND	→	SHIELD
2,3,4,5	A	+12 V IN	→	→	→	→	→
1	B	GND	→	→	→	→	→

— REVISED APRIL 1989 —

SECTION 7
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers. For maximum reliability and performance, all other replacement parts should be identical to those specified.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

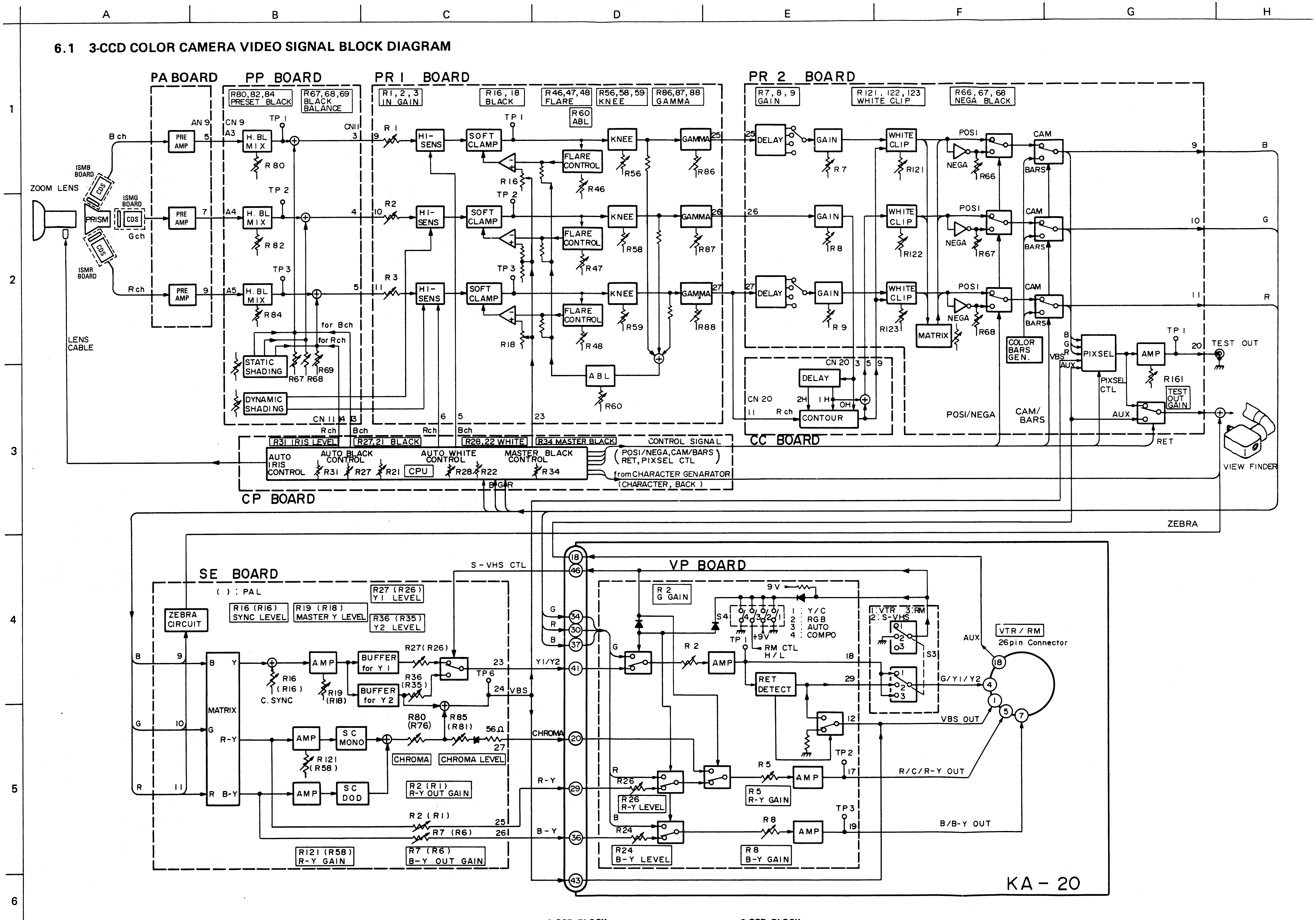
RESISTORS — All resistance values are in ohms (Ω).

K : 1 000
M : 1 000 000
CR : Carbon Resistor
VR : Variable Resistor (Potentiometer)
MFR : Metal Film Resistor
Chip R : Chip Resistor

CAPACITORS — All capacitance values are in μF, unless otherwise indicated.

P : μμF
C Cap : Ceramic Capacitor
E Cap : Electrolytic Capacitor
FM Cap : Film Mica Capacitor
MY Cap : Mylar Capacitor
NP Cap : Non-polar Capacitor
T Cap : Tantalum Capacitor
TR Cap : Trimmer Capacitor
MP Cap : Metalized Paper Capacitor

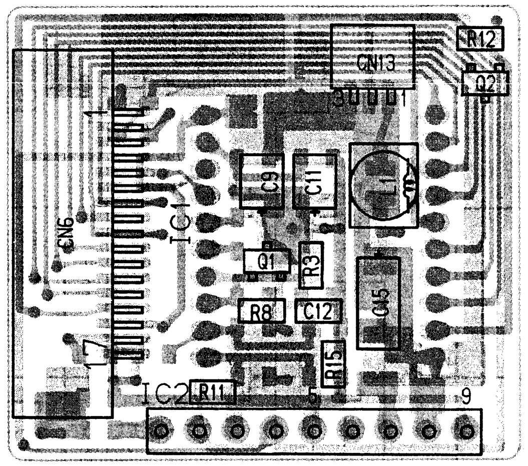
6.1 3-CCD COLOR CAMERA VIDEO SIGNAL BLOCK DIAGRAM


A
B
C
D
E
F
G
H
1
2
3
4
5
6
PA BOARD
PP BOARD
PR 1 BOARD
PR 2 BOARD
CC BOARD
CP BOARD
SE BOARD
VP BOARD
ZOOM LENS
PRISM
CDS
ISMB BOARD
ISMG BOARD
ISMR BOARD
B ch
G ch
R ch
LENS CABLE
PRE AMP
AN 9
CN 9
A3
A4
A5
H. BL MIX
TP 1
TP 2
TP 3
R 80
R 82
R 84
R80, 82, 84 PRESET BLACK
R67, 68, 69 BLACK BALANCE
STATIC SHADING
DYNAMIC SHADING
R67 R68
R69
for B ch
for R ch
CN11
CN 11 4 3
R1, 2, 3 IN GAIN
R 1
R2
R3
HI-SENS
SOFT CLAMP
R16, 18 BLACK
R 16
R18
R46, 47, 48 FLARE
R60 ABL
FLARE CONTROL
R46
R47
R48
ABL
R60
R56, 58, 59 KNEE
KNEE
R56
R58
R59
R86, 87, 88 GAMMA
GAMMA
R86
R87
R88
R7, 8, 9 GAIN
DELAY
GAIN
R 7
R 8
R 9
R121, 122, 123 WHITE CLIP
WHITE CLIP
R121
R122
R123
R66, 67, 68 NEGA BLACK
POSI
NEGA
R66
R67
R68
MATRIX
CAM
BARS
COLOR BARS GEN.
POSI/NEGA
CAM/BARS
PIXSEL
PIXSEL CTL
VBS
AUX
AMP
R161
TEST OUT GAIN
TEST OUT
RET
VIEW FINDER
CN 20
CN 20 3 5 9
2H
1H
OH
CONTOUR
R ch
R31 IRIS LEVEL
R27, 21 BLACK
R28, 22 WHITE
R34 MASTER BLACK
CONTROL SIGNAL
AUTO IRIS CONTROL
AUTO BLACK CONTROL
AUTO WHITE CONTROL
MASTER BLACK CONTROL
R31
R27
R21
CPU
R28
R22
R34
(POSI/NEGA, CAM/BARS RET, PIXSEL CTL)
from CHARACTER GENERATOR (CHARACTER, BACK)
B G R
ZEBRA
ZEBRA CIRCUIT
( ) : PAL
R16 (R16) SYNC LEVEL
R19 (R18) MASTER Y LEVEL
R27 (R26) Y1 LEVEL
R36 (R35) Y2 LEVEL
MATRIX
B
G
R
Y
R-Y
B-Y
R16 (R16)
C. SYNC
R19 (R18)
AMP
BUFFER for Y1
BUFFER for Y2
R27 (R26)
R36 (R35)
TP6
Y1/Y2
VBS
SC MONO
SC DOD
R80 (R76)
R85 (R81)
56Ω
CHROMA
CHROMA LEVEL
R121 (R58)
R2 (R1) R-Y OUT GAIN
R2 (R1)
R7 (R6)
R121 (R58) R-Y GAIN
R7 (R6) B-Y OUT GAIN
S-VHS CTL
R 2 G GAIN
9V
S4
1 : Y/C
2 : RGB
3 : AUTO
4 : COMPO
+9V
RM CTL H/L
R 2
RET DETECT
R26
R26 R-Y LEVEL
R24
R24 B-Y LEVEL
R5
R5 R-Y GAIN
R8
R8 B-Y GAIN
1. VTR 3. RM
2. S-VHS
S3
G/Y1/Y2
VBS OUT
R/C/R-Y OUT
B/B-Y OUT
VTR/RM 26pin Connector
AUX
18
46
34
30
37
41
20
29
36
43
KA-20

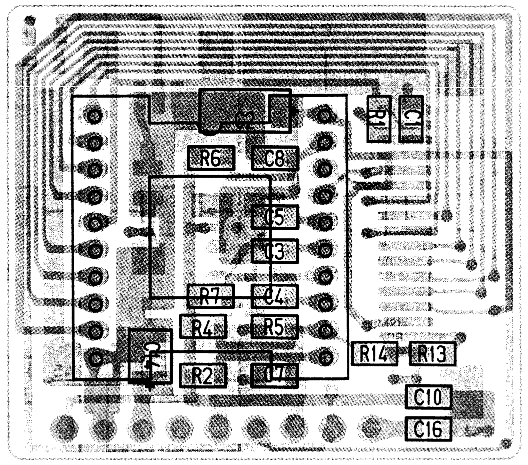
6.2 ISM CIRCUIT BOARD

6.2.1 ISMB board

Parts side view (A)

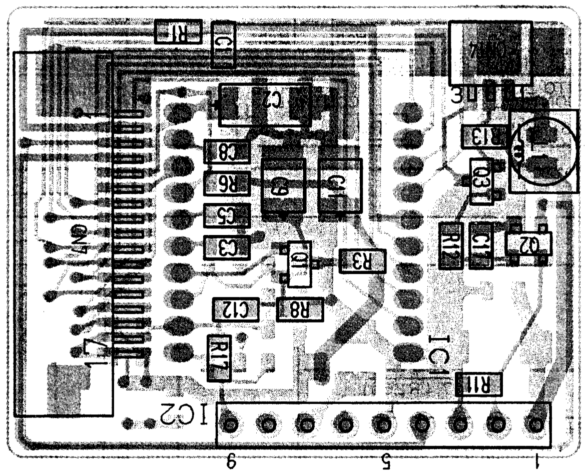

CN13
R12
Q2
CN6
IC1
C9
C11
L1
Q1
R3
R8
C12
R15
IC2
R11
L2
9

Soldered side view (B)

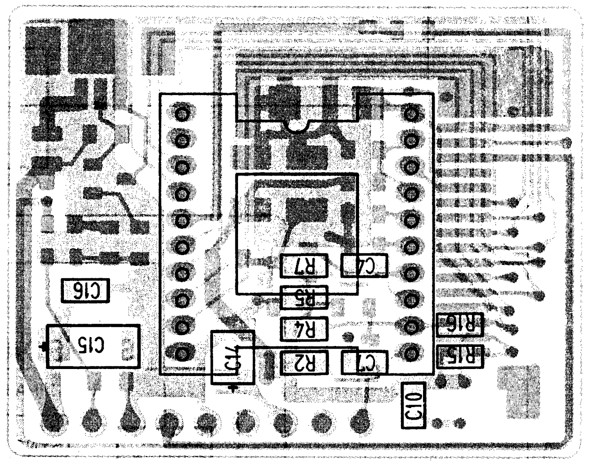

C1
R6
C8
C5
C3
R7
C4
R4
R5
R2
R14
R13
C10
C16

6.2.2 ISMG board

Parts side view (A)

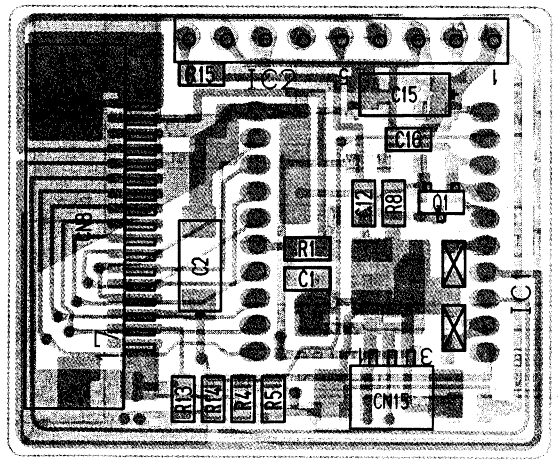

R1
C1
C2
C8
R6
C5
C3
Q1
R3
C12
R8
R17
R13
Q3
Q2
IC1
R11
IC2
9
5
1

Soldered side view (B)

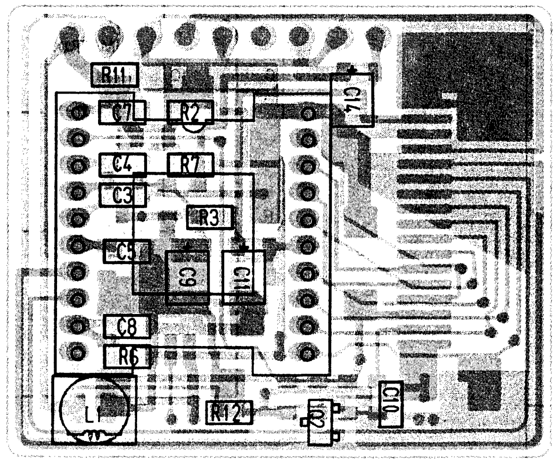

C16
C15
C14
R7
C4
R5
R4
R2
C7
R16
R15
C10

6.2.3 ISMR board

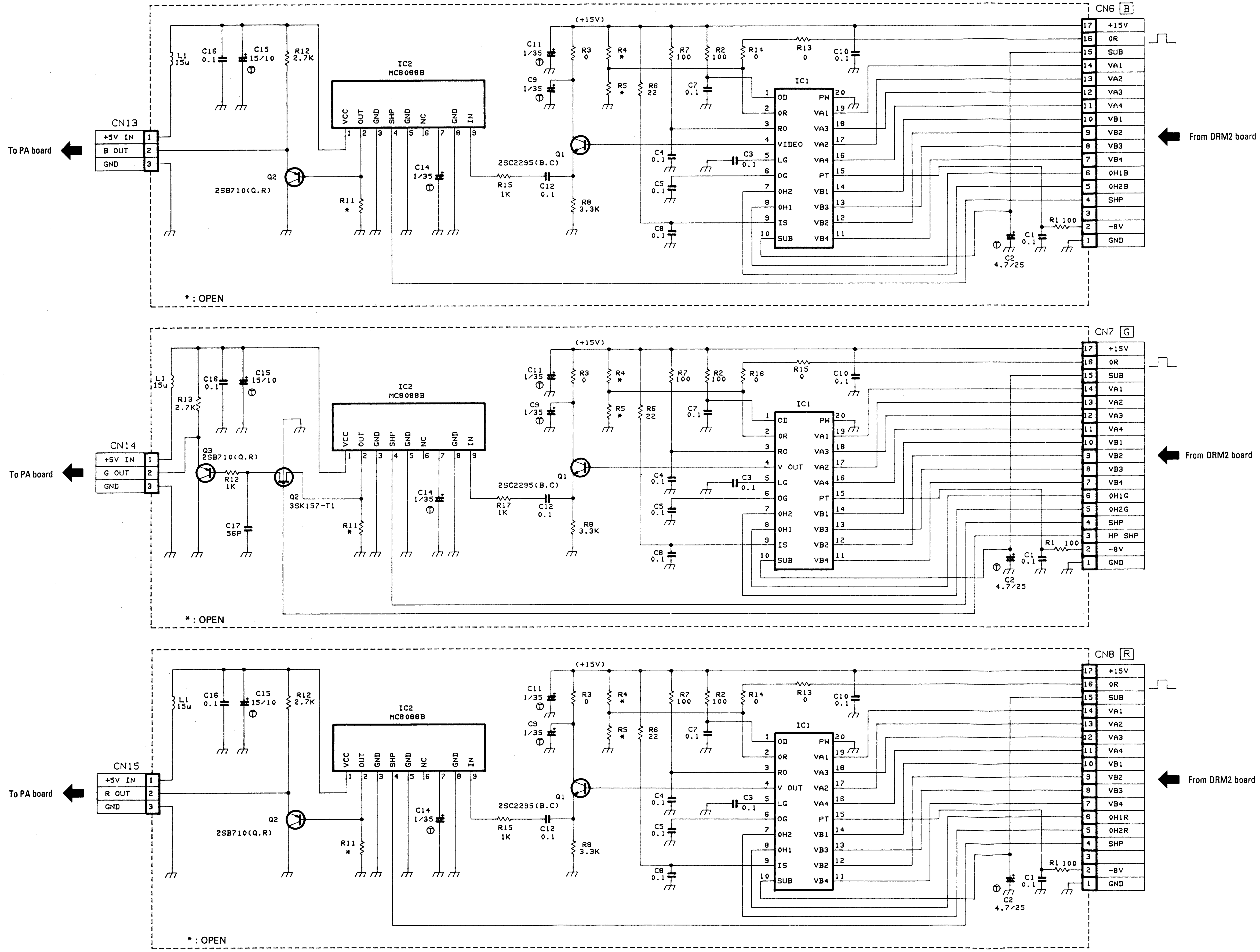
Parts side view (A)


R15
IC2
C15
C16
R17
R8
Q1
R1
C1
Q2
IC1
CN15
R13
R14
R4
R5

Soldered side view (B)


R11
C7
R2
C4
R7
C3
R3
C5
C9
C13
C8
R6
L1
R12
C10
C14

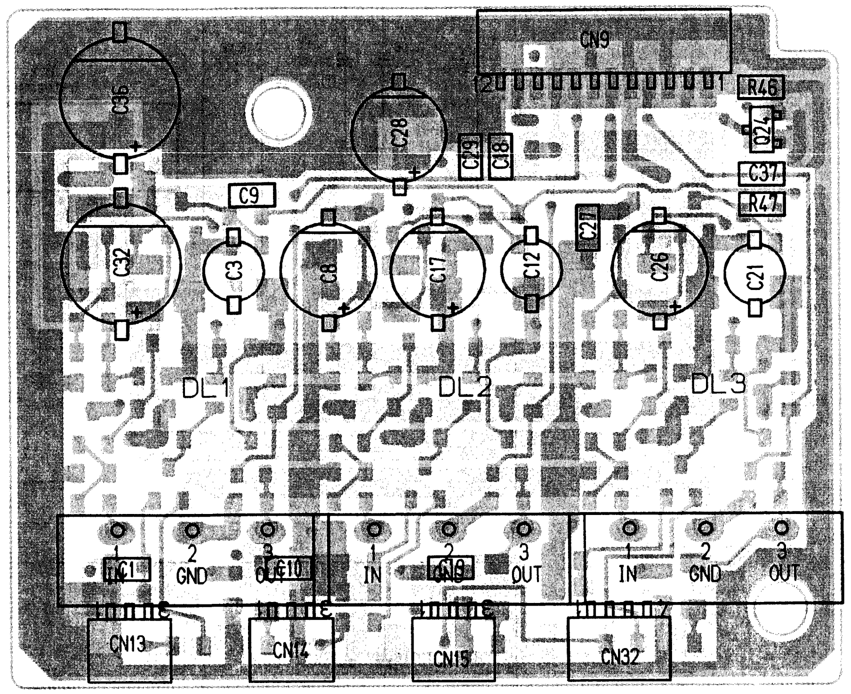
6.3 ISM BOARD SCHEMATIC DIAGRAM


To PA board
CN13
+5V IN
B OUT
GND
L1 15u
C16 0.1
C15 15/10
R12 2.7K
IC2 MC8088B
VCC OUT GND SHP GND NC GND IN
Q2 2SB710(Q.R)
R11 *
C14 1/35
(+15V)
C11 1/35
C9 1/35
R3 0
R4 *
R5 *
R6 22
R7 100
R2 100
R14 0
R13 0
C10 0.1
C7 0.1
Q1 2SC2295(B.C)
R15 1K
C12 0.1
R8 3.3K
C4 0.1
C3 0.1
C5 0.1
C8 0.1
IC1
OD OR RO VIDEO LG OG OH2 OH1 IS SUB
PW VA1 VA3 VA2 VA4 PT VB1 VB3 VB2 VB4
C2 4.7/25
C1 0.1
R1 100
CN6 B
+15V OR SUB VA1 VA2 VA3 VA4 VB1 VB2 VB3 VB4 OH1B OH2B SHP -8V GND
From DRM2 board
*: OPEN
To PA board
CN14
+5V IN
G OUT
GND
R13 2.7K
Q3 2SB710(Q.R)
R12 1K
C17 56P
Q2 3SK157-T1
V OUT
R16 0
R15 0
R17 1K
CN7 G
+15V OR SUB VA1 VA2 VA3 VA4 VB1 VB2 VB3 VB4 OH1G OH2G SHP HP SHP -8V GND
From DRM2 board
*: OPEN
To PA board
CN15
+5V IN
R OUT
GND
CN8 R
+15V OR SUB VA1 VA2 VA3 VA4 VB1 VB2 VB3 VB4 OH1R OH2R SHP -8V GND
From DRM2 board
*: OPEN

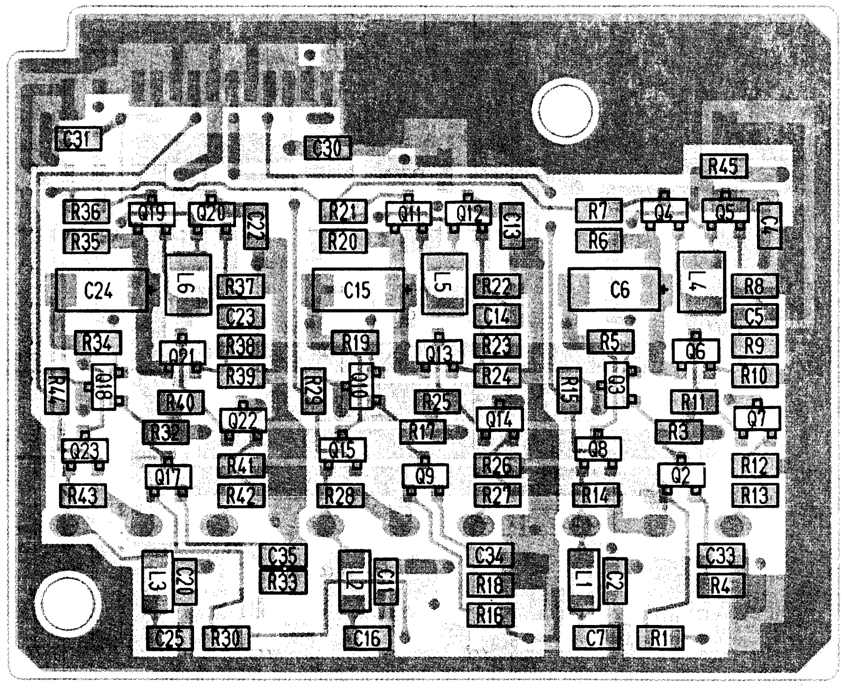
	IC1
NTSC	MN3752
PAL	MN3762

6.4 PA CIRCUIT BOARD

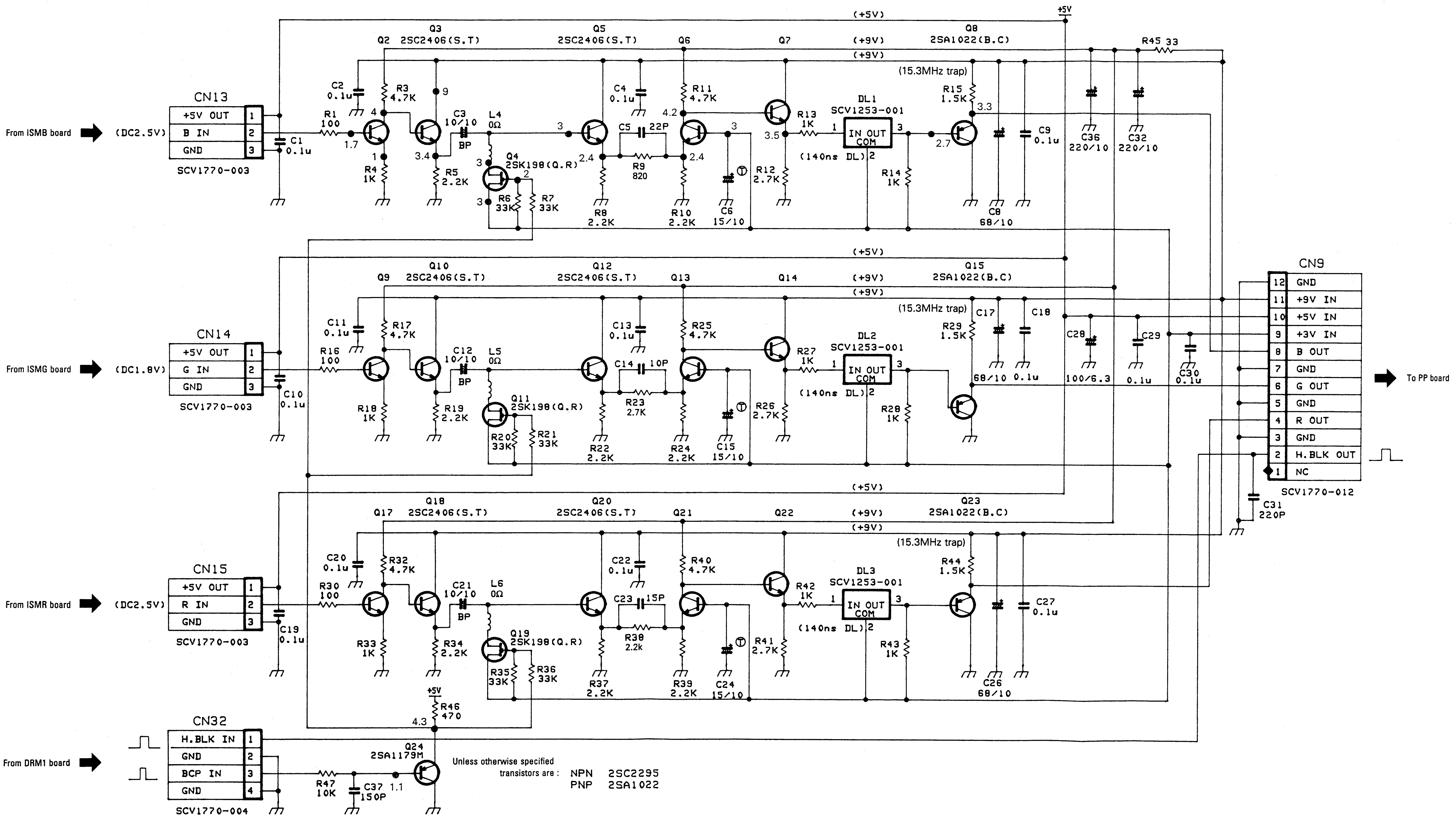
Parts side view (A)


CN9
R46
Q24
C37
R47
C36
C28
C19
C18
C9
C32
C3
C8
C17
C12
C27
C26
C21
DL1
DL2
DL3
1 IN
2 GND
3 OUT
1 IN
2 GND
3 OUT
1 IN
2 GND
3 OUT
C1
C10
CN13
CN14
CN15
CN32

Soldered side view (B)


C31
C30
R45
R36
Q19
Q20
C22
R35
R21
Q11
Q12
C13
R20
R7
Q4
Q5
C4
R6
C24
L6
R37
C23
C15
L5
R22
C14
C6
L4
R8
C5
R34
Q21
R38
R19
Q13
R23
R5
Q6
R9
R44
Q18
R39
R29
Q10
R24
R15
Q3
R10
R40
R25
R11
R32
Q22
R17
Q14
R3
Q7
Q23
Q15
Q8
R12
Q17
R41
Q9
R26
Q2
R13
R43
R42
R28
R27
R14
C35
R33
C34
R18
C33
R4
L3
C20
L2
C11
L1
C2
R16
C25
R30
C16
C7
R1

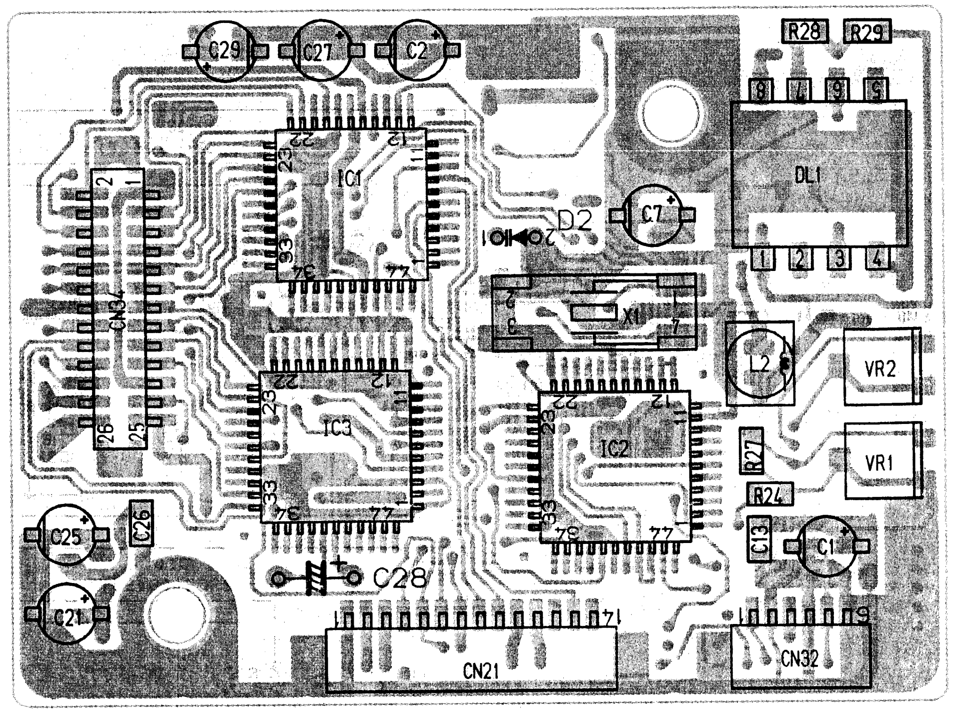
6.5 PA BOARD SCHEMATIC DIAGRAM


From ISMB board
(DC2.5V)
CN13
+5V OUT
B IN
GND
SCV1770-003
From ISMG board
(DC1.8V)
CN14
G IN
From ISMR board
CN15
R IN
From DRM1 board
CN32
H.BLK IN
BCP IN
SCV1770-004
(+5V)
(+9V)
Q2
Q3 2SC2406(S.T)
Q4 2SK198(Q.R)
Q5 2SC2406(S.T)
Q6
Q7
Q8 2SA1022(B.C)
Q9
Q10 2SC2406(S.T)
Q11 2SK198(Q.R)
Q12 2SC2406(S.T)
Q13
Q14
Q15 2SA1022(B.C)
Q17
Q18 2SC2406(S.T)
Q19 2SK198(Q.R)
Q20 2SC2406(S.T)
Q21
Q22
Q23 2SA1022(B.C)
Q24 2SA1179M
DL1 SCV1253-001
DL2 SCV1253-001
DL3 SCV1253-001
IN OUT COM
(140ns DL)
(15.3MHz trap)
R1 100
R3 4.7K
R4 1K
R5 2.2K
R6 33K
R7 33K
R8 2.2K
R9 820
R10 2.2K
R11 4.7K
R12 2.7K
R13 1K
R14 1K
R15 1.5K
R16 100
R17 4.7K
R18 1K
R19 2.2K
R20 33K
R21 33K
R22 2.2K
R23 2.7K
R24 2.2K
R25 4.7K
R26 2.7K
R27 1K
R28 1K
R29 1.5K
R30 100
R32 4.7K
R33 1K
R34 2.2K
R35 33K
R36 33K
R37 2.2K
R38 2.2k
R39 2.2K
R40 4.7K
R41 2.7K
R42 1K
R43 1K
R44 1.5K
R45 33
R46 470
R47 10K
C1 0.1u
C2 0.1u
C3 10/10 BP
C4 0.1u
C5 22P
C6 15/10
C8 68/10
C9 0.1u
C10 0.1u
C11 0.1u
C12 10/10 BP
C13 0.1u
C14 10P
C15 15/10
C17 68/10
C18 0.1u
C19 0.1u
C20 0.1u
C21 10/10 BP
C22 0.1u
C23 15P
C24 15/10
C26 68/10
C27 0.1u
C28 100/6.3
C29 0.1u
C30 0.1u
C31 220P
C32 220/10
C36 220/10
C37 150P
L4 0Ω
L5 0Ω
L6 0Ω
1.7
4
1
3.4
9
3
2
2.4
4.2
3.5
3.3
2.7
4.3
1.1
+5V
CN9
12 GND
11 +9V IN
10 +5V IN
9 +3V IN
8 B OUT
7 GND
6 G OUT
5 GND
4 R OUT
3 GND
2 H.BLK OUT
1 NC
SCV1770-012
To PP board

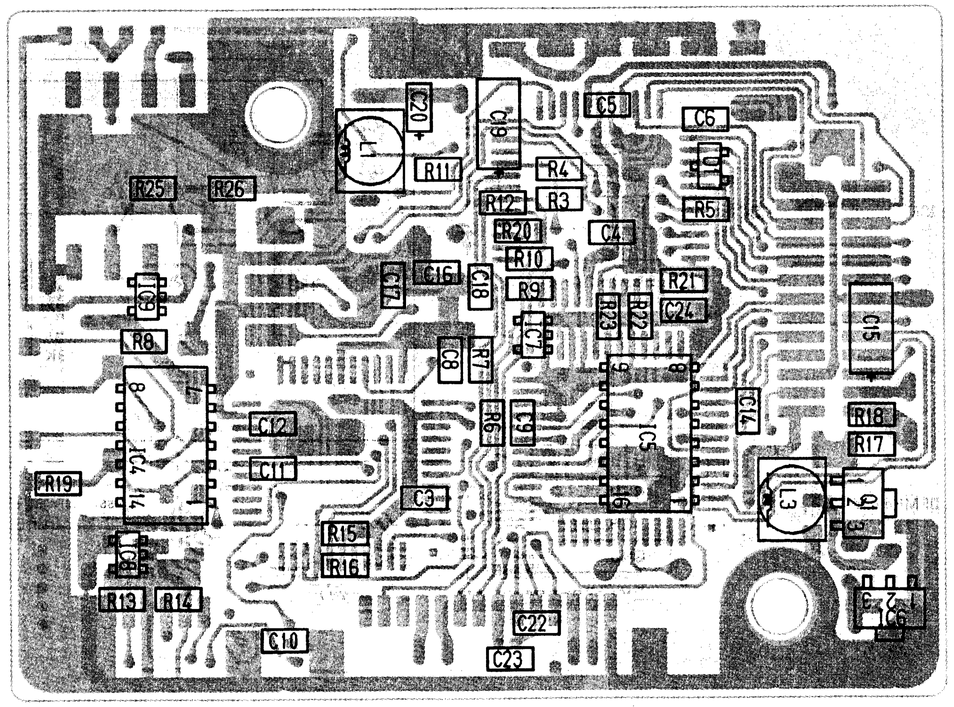
Unless otherwise specified transistors are : NPN 2SC2295 PNP 2SA1022

6.6 DRM1 CIRCUIT BOARDS

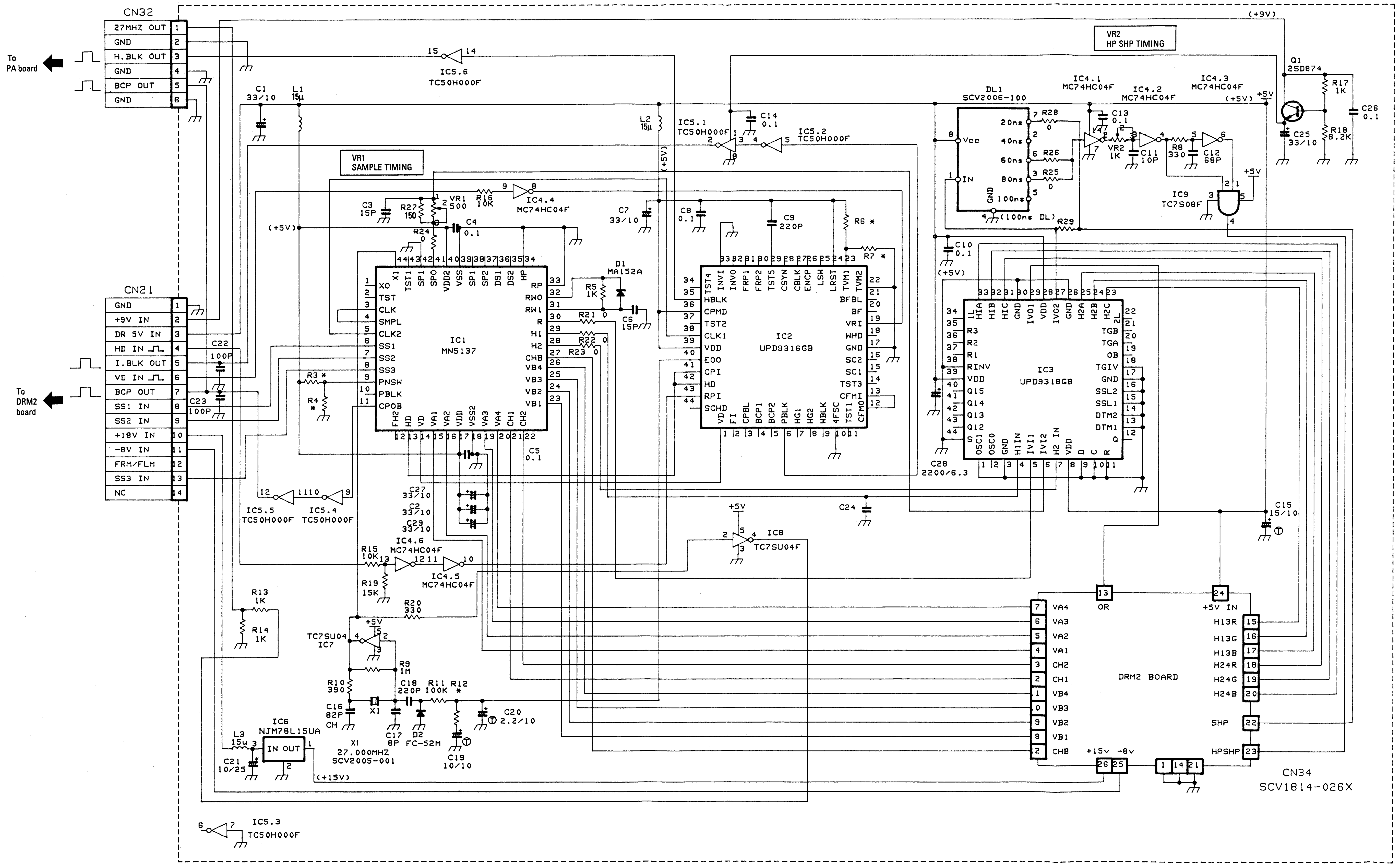
Parts side view (A)


C29
C27
C2
R28
R29
IC1
DL1
D2
C7
CN34
X1
L2
VR2
VR1
IC3
IC2
R27
R24
C25
C26
C28
C13
C1
C21
CN21
CN32

Soldered side view (B)


C20
L1
D1
C5
C6
R11
R4
R25
R26
R12
R3
R5
R20
C4
R10
C16
C18
R9
R21
C24
R23
R22
R8
C8
R7
C15
IC4
C12
R6
IC5
C14
R18
R17
C11
R19
C3
L3
Q1
R15
R16
R13
R14
C22
C10
C23
C9

6.7 DRM1 BOARD SCHEMATIC DIAGRAM


A
B
C
D
E
F
G
H
1
2
3
4
5
6
CN32
27MHZ OUT
GND
H.BLK OUT
GND
BCP OUT
GND
To PA board
CN21
GND
+9V IN
DR 5V IN
HD IN
I.BLK OUT
VD IN
BCP OUT
SS1 IN
SS2 IN
+18V IN
-8V IN
FRM/FLM
SS3 IN
NC
To DRM2 board
VR1 SAMPLE TIMING
VR2 HP SHP TIMING
IC1 MN5137
IC2 UPD9316GB
IC3 UPD9318GB
IC4.1 MC74HC04F
IC4.2 MC74HC04F
IC4.3 MC74HC04F
IC4.4 MC74HC04F
IC4.5 MC74HC04F
IC4.6 MC74HC04F
IC5.1 TC50H000F
IC5.2 TC50H000F
IC5.3 TC50H000F
IC5.4 TC50H000F
IC5.5 TC50H000F
IC5.6 TC50H000F
IC6 NJM78L15UA
IC7 TC7SU04
IC8 TC7SU04F
IC9 TC7S08F
DL1 SCV2006-100
Q1 2SD874
D1 MA152A
D2 FC-52M
X1 27.000MHZ SCV2005-001
DRM2 BOARD
CN34 SCV1814-026X
VA4
VA3
VA2
VA1
CH2
CH1
VB4
VB3
VB2
VB1
CHB
OR
+5V IN
H13R
H13G
H13B
H24R
H24G
H24B
SHP
HPSHP
+15v
-8v
(+9V)
(+5V)
(+15V)

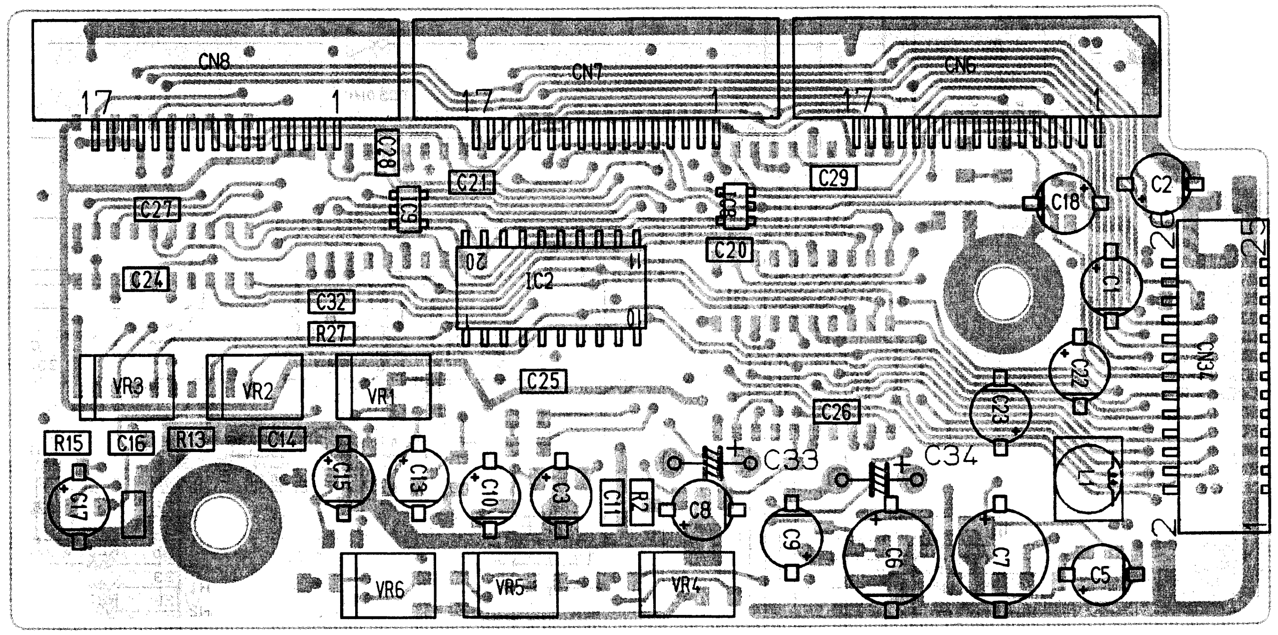
	NOR	1/100	1/250	1/500	1/1000	1/2000
SS1	L	H	L	H	L	H
SS2	L	L	H	H	L	L
SS3	L	L	L	L	H	H

*

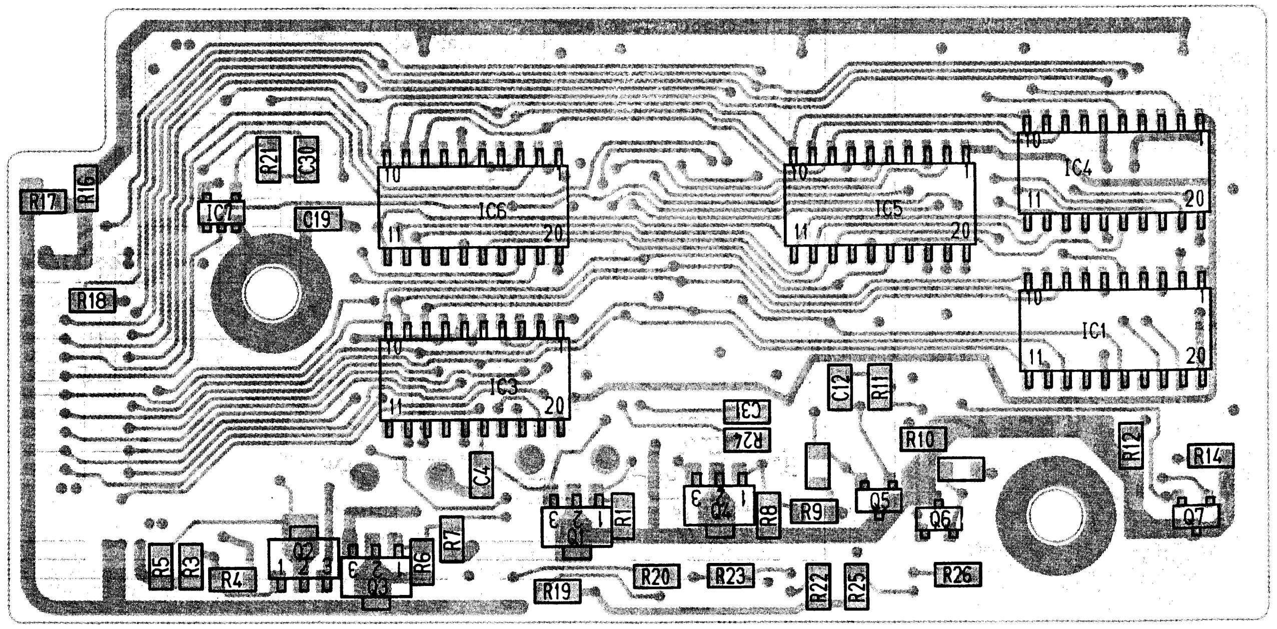
	R12	R3	R4	R6	R7
NTSC	6.8K	0	OPEN	OPEN	0
PAL	1K	OPEN	0	0	OPEN

6.8 DRM2 CIRCUIT BOARDS

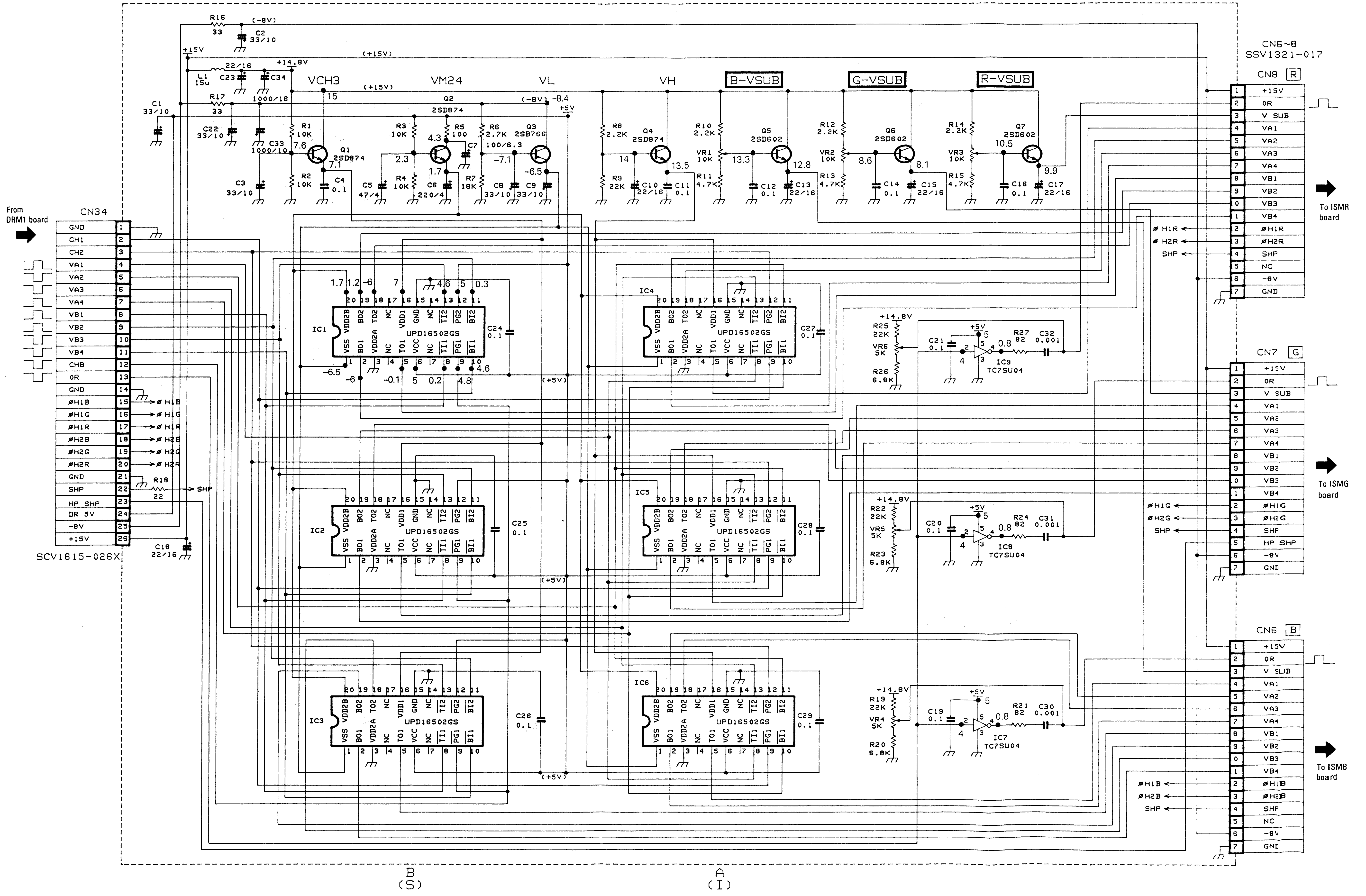
Parts side view (A)


CN8
17
1
CN7
17
1
CN6
17
1
C28
C21
C29
C27
C18
C2
C20
IC2
C24
C32
R27
C1
C22
C23
VR3
VR2
VR1
C25
C26
R15
C16
R13
C14
C15
C13
C10
C3
C11
R2
C8
C33
C34
L1
C17
C9
C6
C7
C5
VR6
VR5
VR4
25
2
1

Soldered side view (B)


R17
R16
R21
C30
IC7
C19
IC6
IC5
IC4
IC1
R18
IC3
C12
R11
C31
R24
R10
R12
R14
C4
Q1
R1
Q4
R8
R9
Q5
Q6
Q7
R7
R6
Q2
Q3
R5
R3
R4
R20
R23
R19
R22
R25
R26

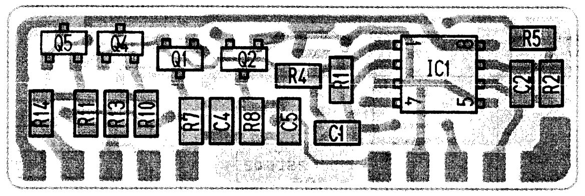
6.9 DRM2 BOARD SCHEMATIC DIAGRAM


A
B
C
D
E
F
G
H
1
2
3
4
5
6
From DRM1 board
CN34
GND
CH1
CH2
VA1
VA2
VA3
VA4
VB1
VB2
VB3
VB4
CHB
OR
GND
øH1B
øH1G
øH1R
øH2B
øH2G
øH2R
GND
SHP
HP SHP
DR 5V
-8V
+15V
SCV1815-026X
R16 33
C2 33/10
(-8V)
+15V
(+15V)
L1 15u
22/16
+14.8V
C23
C34
R17 33
1000/16
C1 33/10
C22 33/10
C33 1000/10
C3 33/10
VCH3
VM24
VL
VH
B-VSUB
G-VSUB
R-VSUB
R1 10K
R2 10K
Q1 2SD874
C4 0.1
R3 10K
R4 10K
Q2 2SD874
R5 100
C5 47/4
C6 220/4
C7
R6 2.7K
R7 18K
Q3 2SB766
C8 33/10
C9 33/10
100/6.3
(-8V)
-8.4
+5V
R8 2.2K
R9 22K
Q4 2SD874
C10 22/16
C11 0.1
R10 2.2K
VR1 10K
R11 4.7K
Q5 2SD602
C12 0.1
C13 22/16
R12 2.2K
VR2 10K
R13 4.7K
Q6 2SD602
C14 0.1
C15 22/16
R14 2.2K
VR3 10K
R15 4.7K
Q7 2SD602
C16 0.1
C17 22/16
15
7.6
7.1
4.3
2.3
1.7
-7.1
-6.5
14
13.5
13.3
12.8
8.6
8.1
10.5
9.9
IC1
IC2
IC3
IC4
IC5
IC6
UPD16502GS
VDD2B
B02
T02
NC
VDD1
GND
NC
TI2
PG2
BI2
VSS
B01
VDD2A
NC
T01
VCC
NC
TI1
PG1
BI1
C24 0.1
C25 0.1
C26 0.1
C27 0.1
C28 0.1
C29 0.1
1.7
1.2
-6
7
4.6
5
0.3
-6.5
-6
-0.1
5
0.2
4.8
4.6
(+5V)
+14.8V
R25 22K
VR6 5K
R26 6.8K
C21 0.1
+5V
R27 82
C32 0.001
0.8
IC9 TC7SU04
R22 22K
VR5 5K
R23 6.8K
C20 0.1
R24 82
C31 0.001
IC8 TC7SU04
R19 22K
VR4 5K
R20 6.8K
C19 0.1
R21 82
C30 0.001
IC7 TC7SU04
R18 22
SHP
C18 22/16
CN6~8
SSV1321-017
CN8 R
CN7 G
CN6 B
+15V
OR
V SUB
VA1
VA2
VA3
VA4
VB1
VB2
VB3
VB4
øH1R
øH2R
SHP
NC
-8V
GND
øH1G
øH2G
HP SHP
øH1B
øH2B
To ISMR board
To ISMG board
To ISMB board
B (S)
A (I)

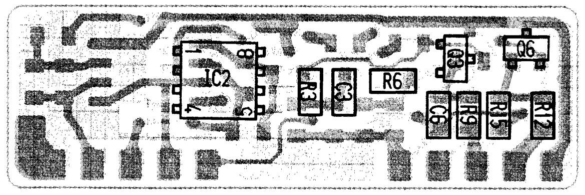
6.10 P. P CIRCUIT BOARD

– SH MIX board (CBM2) [CBMC2288-A-00A] –

(A)

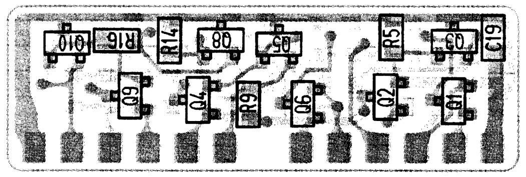

Q5
Q4
Q1
Q2
R4
IC1
R5
R14
R11
R13
R10
R7
C4
R8
C5
C1
R1
C2
R2

(B)

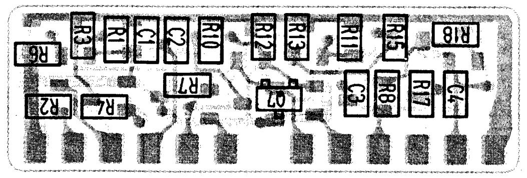

IC2
R3
C3
R6
Q3
Q6
C6
R9
R15
R12

– PRE BL MIX board (CBM1) [CBMC2288-9-00A] –

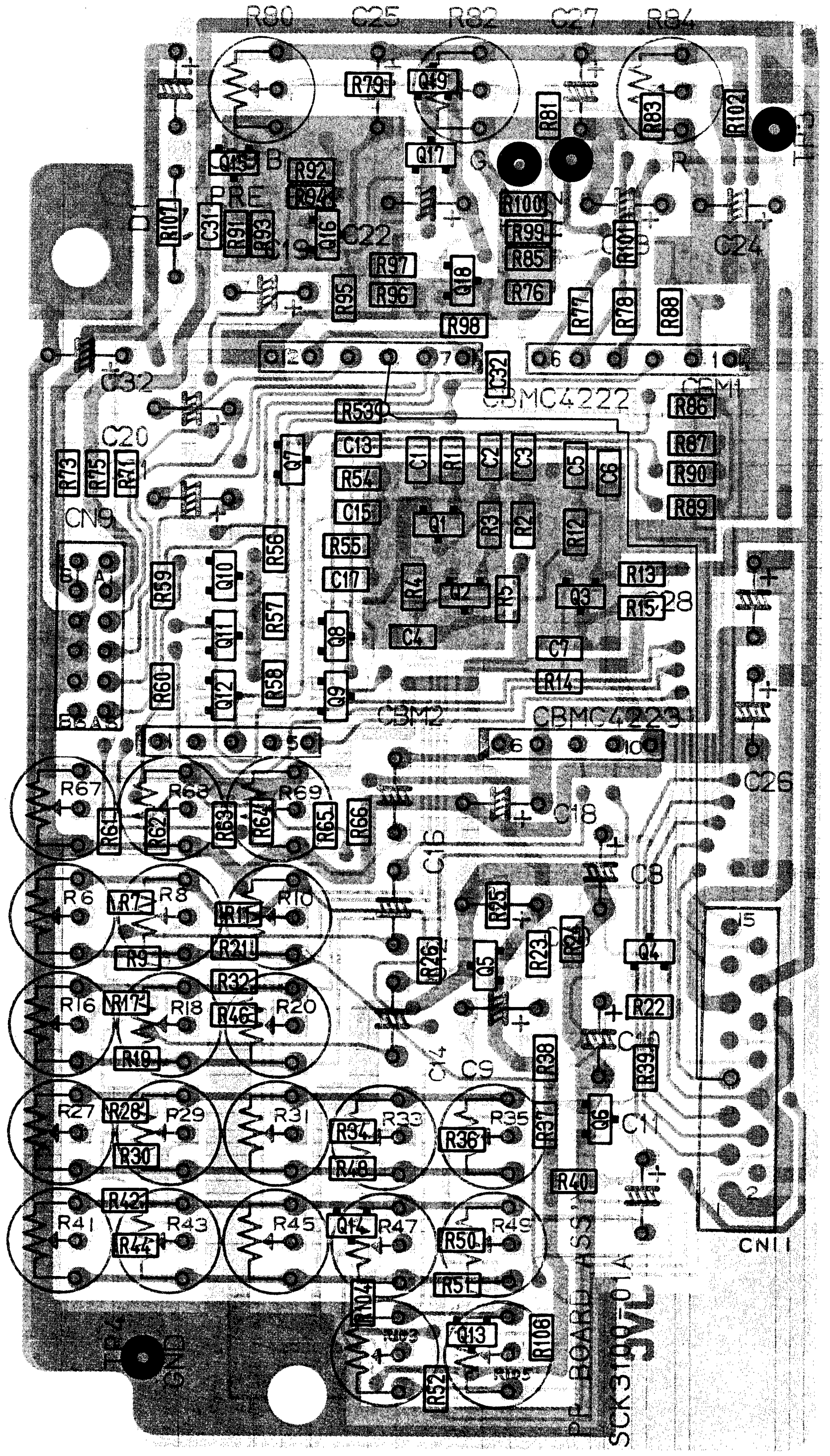
(A)


Q10
R16
R14
Q8
Q5
R5
Q3
R13
Q9
Q4
R9
Q6
Q2
Q1

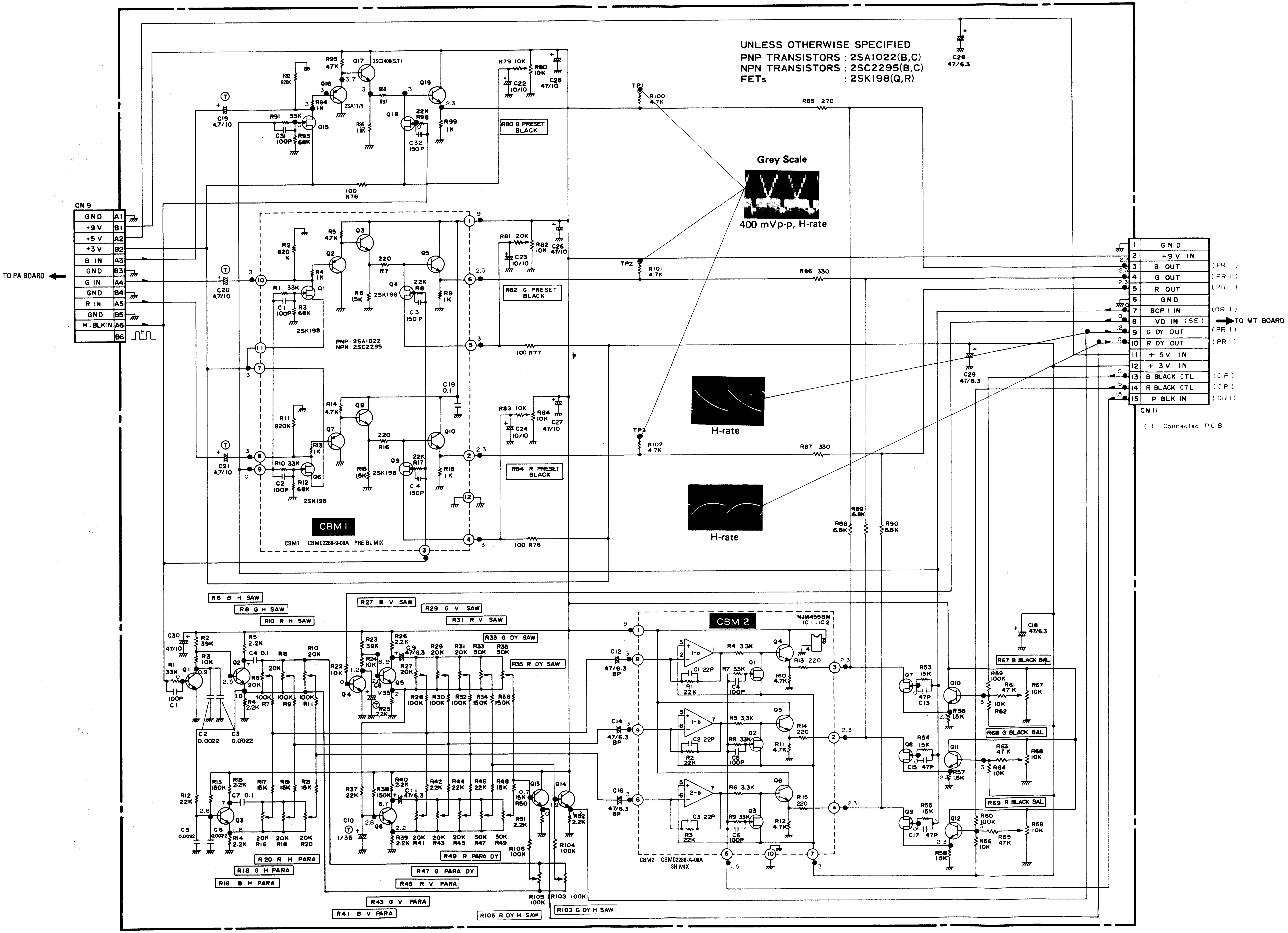
(B)


R6
R3
R1
C1
C2
R10
R12
R13
R11
R15
R18
R2
R4
R7
Q7
C3
R8
R17
C4

– P. P board –


R80
C25
R82
C27
R84
R79
Q19
R81
R83
R102
Q17
G
R
TP3
B
PRE
R92
R94
R100
R99
R85
R76
R107
C31
R91
R93
Q16
C22
R97
R96
Q18
R98
R95
R77
R78
R88
R101
C24
C32
C20
CBMC4222
CBM1
R53
R86
R87
R90
R89
C13
R54
C15
R55
C17
C11
C1
R1
C2
C3
C5
C6
Q1
R3
R2
R12
R4
Q2
R5
Q3
R13
R15
C28
C4
C7
R14
R73
R75
R71
CN9
Q7
R56
R59
Q10
R57
Q11
Q8
R60
Q12
R58
Q9
CBM2
CBMC4223
R67
R68
R69
R61
R62
R63
R64
R65
R66
C16
C18
C26
C8
R6
R7
R8
R10
R11
R9
R31
R32
R16
R17
R18
R20
R46
R19
R26
R42
Q5
R23
R24
R25
Q4
R22
J5
C14
C9
C10
R38
R39
R27
R28
R29
R31
R33
R35
R30
R34
R36
R37
Q6
C11
R40
R41
R42
R43
R45
R47
R49
R44
Q14
R50
R51
R104
R103
Q13
R52
R105
R106
CN11
GND
TP2
P.P BOARD ISSUE
SCK3100-01A

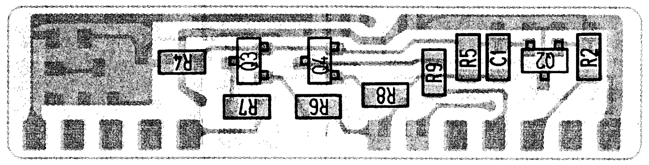
6.11 P. P BOARD SCHEMATIC DIAGRAM


UNLESS OTHERWISE SPECIFIED
PNP TRANSISTORS : 2SA1022(B,C)
NPN TRANSISTORS : 2SC2295(B,C)
FETs : 2SK198(Q,R)
CN9
GND A1
+9V B1
+5V A2
+3V B2
B IN A3
GND B3
G IN A4
GND B4
R IN A5
GND B5
H. BLKIN A6
B6
TO PA BOARD
CN11
1 GND
2 +9V IN (PR1)
3 B OUT (PR1)
4 G OUT (PR1)
5 R OUT
6 GND
7 BCP1 IN (DR1)
8 VD IN (SE)
9 G DY OUT (PR1)
10 R DY OUT (PR1)
11 +5V IN
12 +3V IN
13 B BLACK CTL (CP)
14 R BLACK CTL (CP)
15 P BLK IN (DR1)
TO MT BOARD
( ) : Connected PCB
Grey Scale
400 mVp-p, H-rate
H-rate
H-rate
TP1
TP2
TP3
R80 B PRESET BLACK
R82 G PRESET BLACK
R84 R PRESET BLACK
CBM1
CBM1 CBMC2288-9-00A PRE BL MIX
PNP: 2SA1022
NPN: 2SC2295
CBM 2
NJM4558M IC1·IC2
CBM2 CBMC2288-A-00A SH MIX
R6 B H SAW
R8 G H SAW
R10 R H SAW
R27 B V SAW
R29 G V SAW
R31 R V SAW
R33 G DY SAW
R35 R DY SAW
R20 R H PARA
R18 G H PARA
R16 B H PARA
R49 R PARA DY
R47 G PARA DY
R45 R V PARA
R43 G V PARA
R41 B V PARA
R105 R DY H. SAW
R103 G DY H SAW
R67 B BLACK BAL
R68 G BLACK BAL
R69 R BLACK BAL
Q17 2SC2406(S.T)
Q16 2SA1179
R85 270
R86 330
R87 330
R76 100
R77 100
R78 100
C28 47/6.3
C29 47/6.3
C18 47/6.3
C19 4.7/10
C20 4.7/10
C21 4.7/10

6.12 PR1 CIRCUIT BOARDS

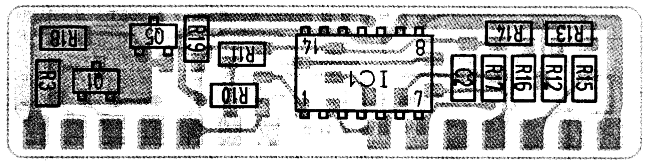
– B HI-SENS board (CBM1) [CBMC2288-5-00A] –
– G HI-SENS board (CBM2) [CBMC2288-4-00A] –
– R HI-SENS board (CBM3) [CBMC2288-3-00A] –

(A)



R4
Q3
Q4
R7
R6
R8
R9
R5
C1
Q2
R2

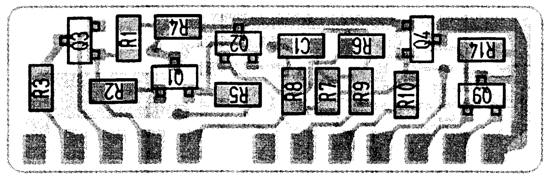
(B)



R18
Q5
R19
R11
R10
IC1
14
8
7
R14
R13
Q1
R17
R16
R12
R15

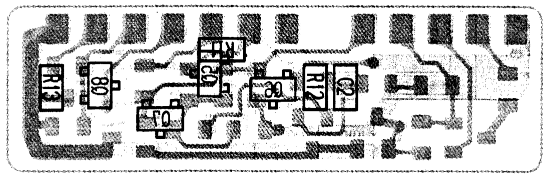
– B GAMMA IN board (CBM4) [CBMC2288-6-00A] –
– R GAMMA IN board (CBM6) [CBMC2288-7-01A] –
– G GAMMA IN board (CBM5) [CBMC2288-8-00A] –

(A)



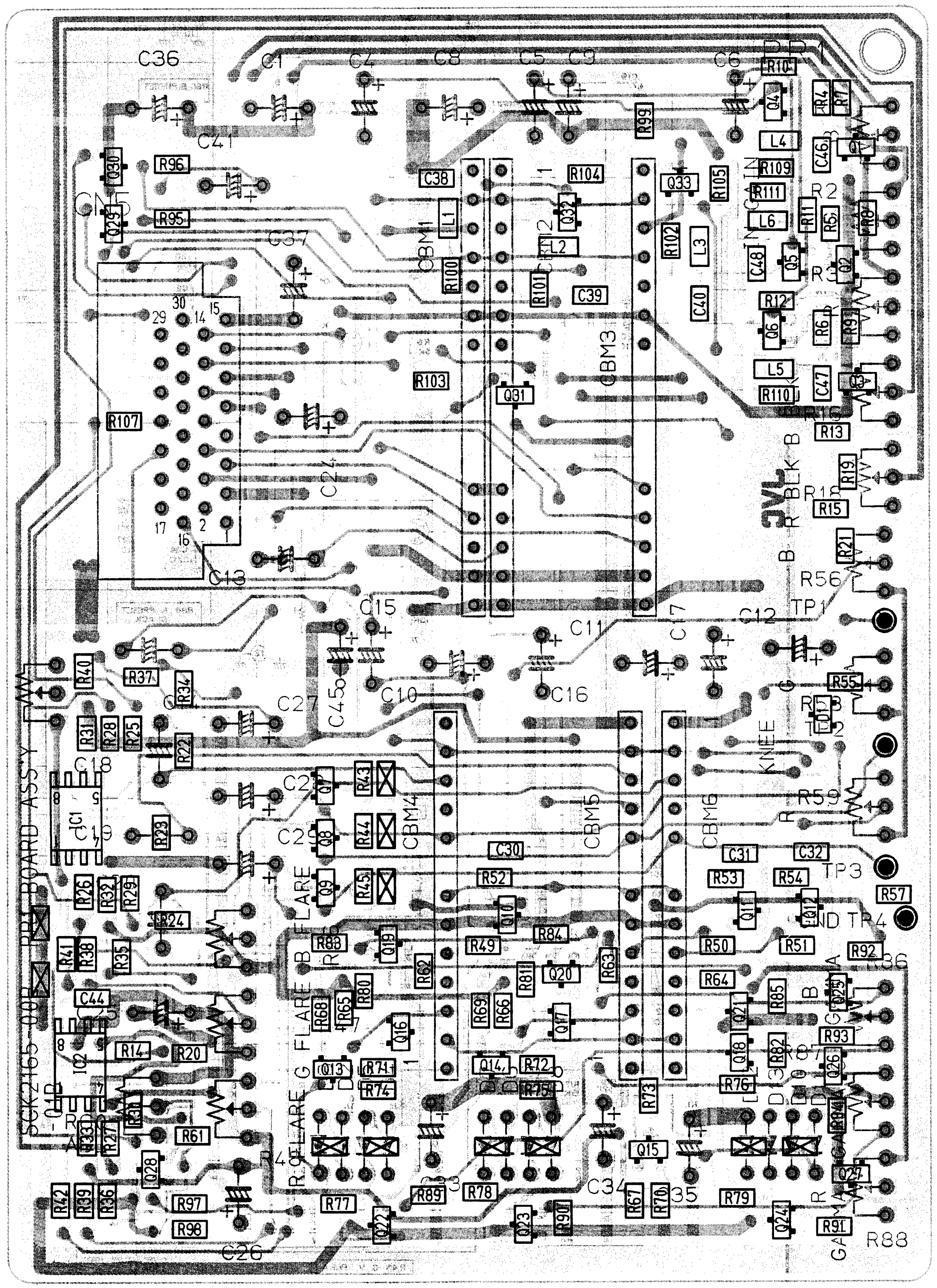
Q3
R1
R4
Q2
C1
R6
Q4
R14
R3
R2
Q1
R5
R8
R7
R9
R10
Q5

(B)



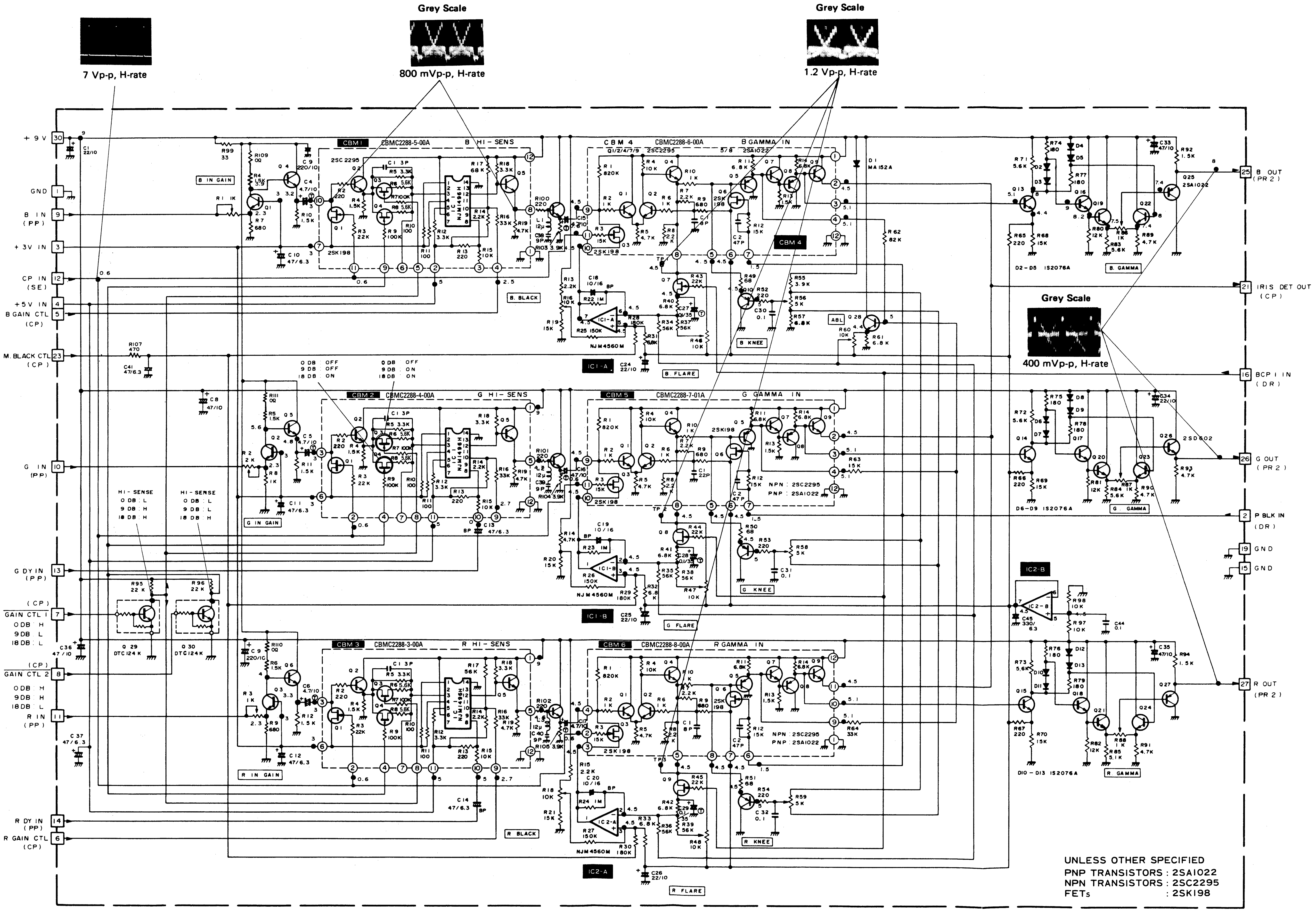
R13
Q8
R11
Q7
Q6
R12

– PR1 board –



C36
C1
C4
C8
C5
C9
C6
C41
R96
R95
C37
CBM1
CBM2
CBM3
CBM4
CBM5
CBM6
R99
R104
Q32
Q33
R105
R102
L3
C40
L1
L2
R100
R101
C39
C38
R103
Q31
R107
C13
C15
C11
C17
C12
C16
C10
C27
C45
C18
IC1
C19
C21
C29
C30
C31
C32
TP1
TP2
TP3
TP4
R56
R57
R59
KNEE
R BLK B
JVC
FLARE
B FLARE
G FLARE
R FLARE
GAMMA
SCK2165-005 PR1 BOARD ASS'Y
C44
C34
C35
C26
R88
Q15
Q23
Q24
Q27

6.13 PR1 BOARD SCHEMATIC DIAGRAM


Grey Scale
7 Vp-p, H-rate
800 mVp-p, H-rate
1.2 Vp-p, H-rate
400 mVp-p, H-rate
+9V 30
GND 1
B IN (PP) 9
+3V IN 3
CP IN (SE) 12
+5V IN 4
B GAIN CTL (CP) 5
M. BLACK CTL (CP) 23
G IN (PP) 10
G DY IN (PP) 13
(CP) GAIN CTL 1 7
0DB : L
9DB : L
18DB : L
(CP) GAIN CTL 2 8
0DB : H
9DB : H
18DB : L
R IN (PP) 11
R DY IN (PP) 14
R GAIN CTL (CP) 6
CBM1 CBMC2288-5-00A B HI-SENS
CBM2 CBMC2288-4-00A G HI-SENS
CBM3 CBMC2288-3-00A R HI-SENS
CBM4 CBMC2288-6-00A B GAMMA IN
CBM5 CBMC2288-7-01A G GAMMA IN
CBM6 CBMC2288-8-00A R GAMMA IN
B IN GAIN
G IN GAIN
R IN GAIN
B. BLACK
R BLACK
B FLARE
G FLARE
R FLARE
B KNEE
G KNEE
R KNEE
B. GAMMA
G GAMMA
R GAMMA
ABL
IC1-A
IC1-B
IC2-A
IC2-B
NJM4560M
NJM4196H
HI-SENSE 0DB : L 9DB : H 18DB : H
HI-SENSE 0DB : L 9DB : L 18DB : H
0DB OFF 9DB OFF 18DB ON
0DB OFF 9DB ON 18DB ON
Q29 DTC124K
Q30 DTC124K
Q25 2SA1022
Q26 2SD602
D1 MA152A
D2-D5 1S2076A
D6-D9 1S2076A
D10-D13 1S2076A
NPN : 2SC2295
PNP : 2SA1022
25 B OUT (PR2)
21 IRIS DET OUT (CP)
16 BCP IN (DR)
26 G OUT (PR2)
2 P BLK IN (DR)
19 GND
15 GND
27 R OUT (PR2)

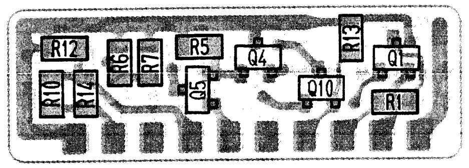
UNLESS OTHER SPECIFIED
PNP TRANSISTORS : 2SA1022
NPN TRANSISTORS : 2SC2295
FETs : 2SK198

( ) : CONNECTED PCB

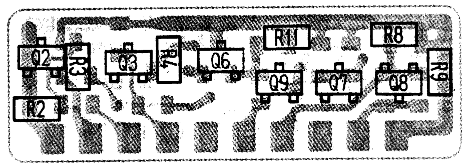
6.14 PR2 CIRCUIT BOARDS

– W & B CLIP board (CBM1/CBM2/CBM3) [CBMC2288-2-00A] –

(A)

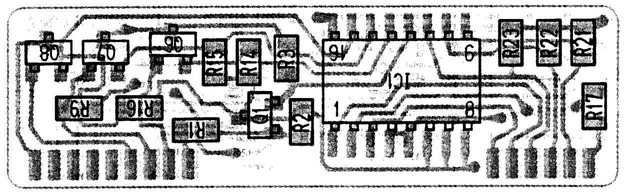

R12
R5
Q4
R13
Q1
Q5
Q10
R1

(B)

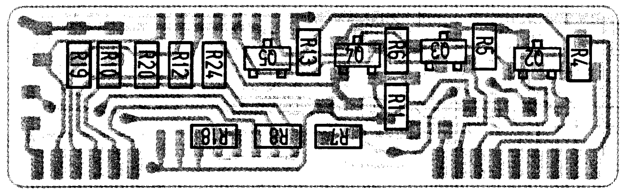

R11
R8
Q2
R3
Q3
R4
Q6
Q9
Q7
Q8
R9
R2

– PIX IN board (CBM4) [CBMC2288-1-00A] –

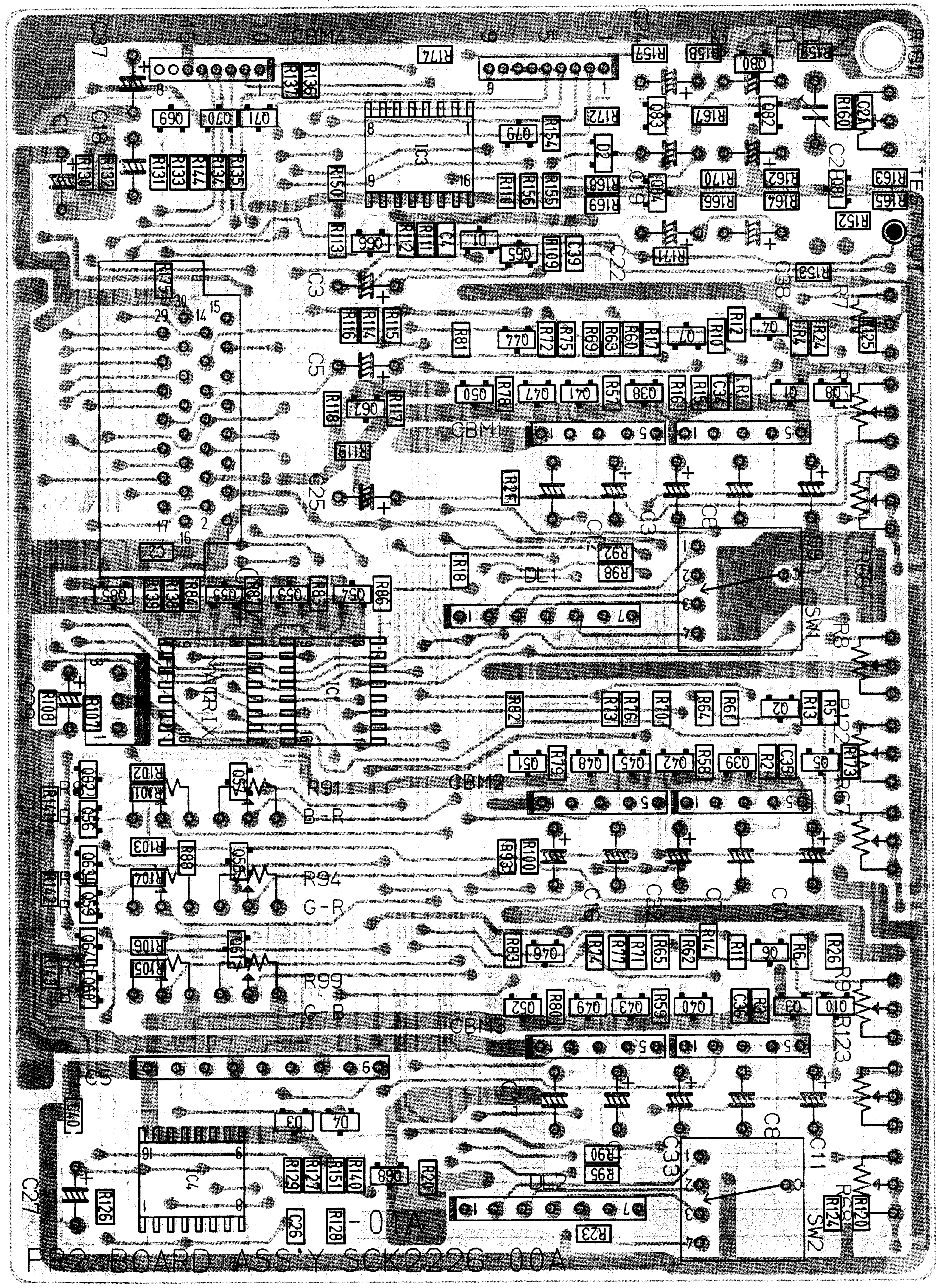
(A)



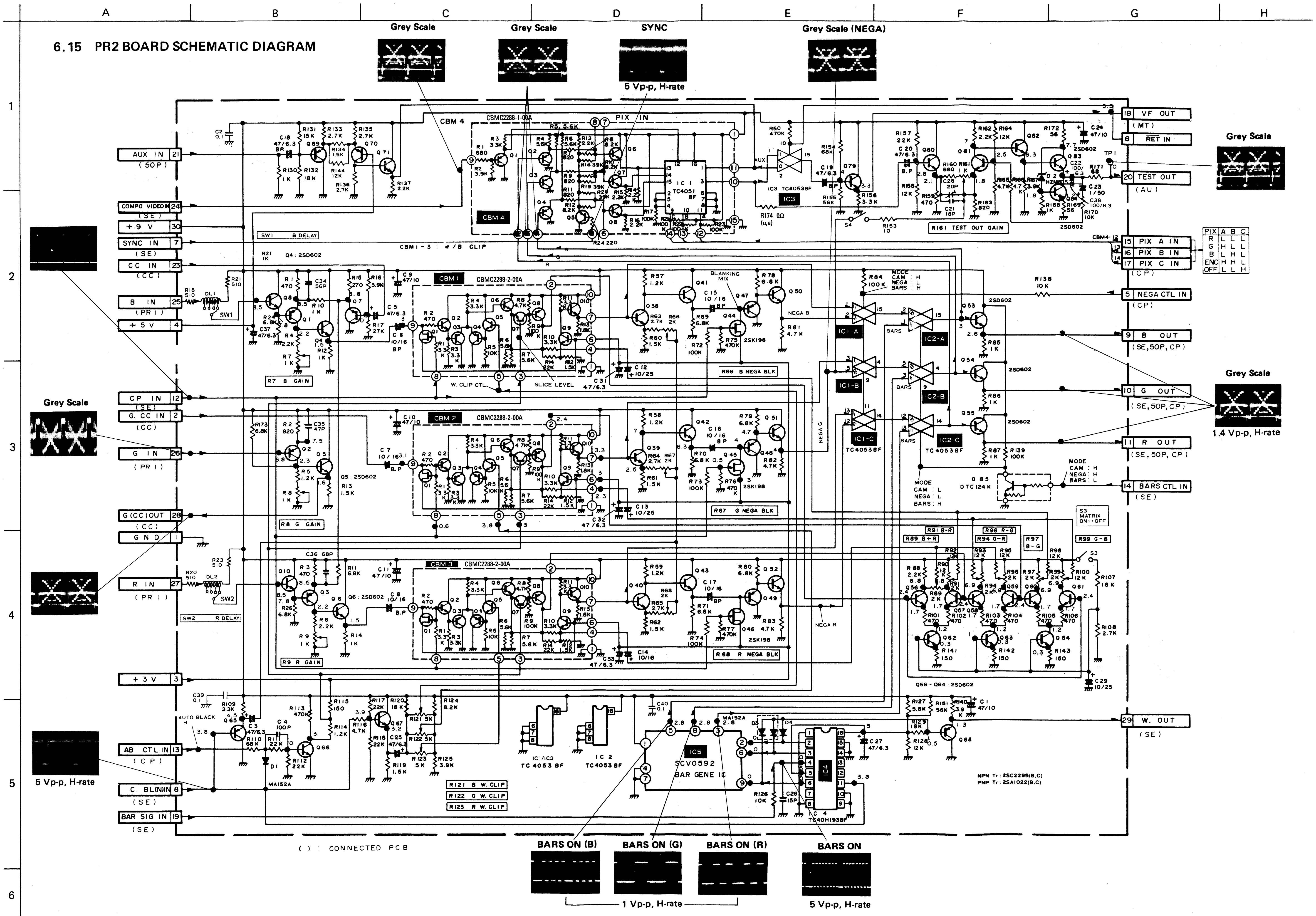
(B)



– PR2 board –

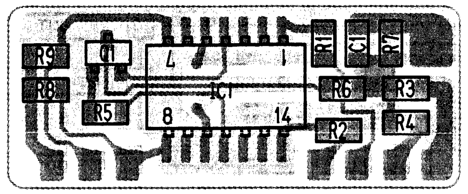

CBM4
IC3
TEST OUT
MATRIX
IC1
CBM1
CBM2
CBM3
DL1
SW1
SW2
IC4
R91
B-R
R94
G-R
R99
G-B
PR2 BOARD ASS'Y SCK2226-00A

6.15 PR2 BOARD SCHEMATIC DIAGRAM

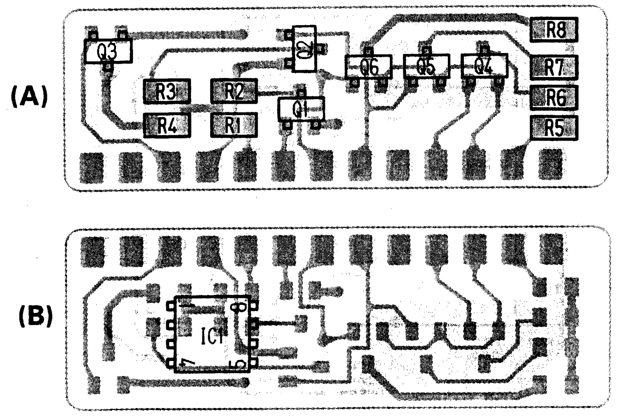

A
B
C
D
E
F
G
H
1
2
3
4
5
6
Grey Scale
Grey Scale
SYNC
5 Vp-p, H-rate
Grey Scale (NEGA)
Grey Scale
Grey Scale
1.4 Vp-p, H-rate
Grey Scale
5 Vp-p, H-rate
AUX IN 21 (50P)
COMPO VIDEO IN 24 (SE)
+9 V 30
SYNC IN 7 (SE)
CC IN 23 (CC)
B IN 25 (PRI)
+5 V 4
CP IN 12 (SE)
G. CC IN 2 (CC)
G IN 26 (PRI)
G(CC)OUT 28 (CC)
GND 1
R IN 27 (PRI)
+3 V 3
AB CTL IN 13 (CP)
C. BL(N)IN 8 (SE)
BAR SIG IN 19 (SE)
18 VF OUT (MT)
6 RET IN
20 TEST OUT (AU)
15 PIX A IN
16 PIX B IN
17 PIX C IN (CP)
CBM4-12
5 NEGA CTL IN (CP)
9 B OUT (SE, 50P, CP)
10 G OUT (SE, 50P, CP)
11 R OUT (SE, 50P, CP)
14 BARS CTL IN (SE)
29 W. OUT (SE)
PIX A B C
R L L L
G H L L
B L H L
ENC H H L
OFF L L H
CBM 4
CBMC2288-1-00A
PIX IN
IC1 TC4051BF
IC3 TC4053BF
CBM 1
CBMC2288-2-00A
CBM 2
CBMC2288-2-00A
CBM 3
CBMC2288-2-00A
CBM1-3 : W/B CLIP
SW1 B DELAY
SW2 R DELAY
R7 B GAIN
R8 G GAIN
R9 R GAIN
R66 B NEGA BLK
R67 G NEGA BLK
R68 R NEGA BLK
R161 TEST OUT GAIN
W. CLIP CTL
SLICE LEVEL
BLANKING MIX
NEGA B
NEGA G
NEGA R
IC1-A
IC1-B
IC1-C TC4053BF
IC2-A
IC2-B
IC2-C TC4053BF
BARS
MODE CAM : H NEGA : L BARS : H
MODE CAM : L NEGA : L BARS : H
MODE CAM : H NEGA : H BARS : L
Q85 DTC124K
S3 MATRIX ON--OFF
R91 B-R
R89 B+R
R96 R-G
R94 G-R
R97 B-G
R99 G-B
Q56 - Q64 : 2SD602
Q4 : 2SD602
Q5 : 2SD602
Q6 : 2SD602
2SK198
AUTO BLACK H
MA152A
R121 B W. CLIP
R122 G W. CLIP
R123 R W. CLIP
IC1/IC3 TC4053BF
IC2 TC4053BF
IC5 SCV0592 BAR GENE IC
IC4 TC40H193BF
NPN Tr : 2SC2295(B,C)
PNP Tr : 2SA1022(B,C)
( ) : CONNECTED PCB
BARS ON (B)
BARS ON (G)
BARS ON (R)
BARS ON
1 Vp-p, H-rate
5 Vp-p, H-rate

6.16 CC CIRCUIT BOARDS

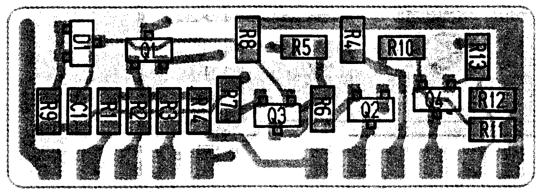
– AGC AMP board (CBMC1/CBM2) [CBMC2288-B-00A] –


R9
R8
Q1
R5
IC1
R1
C1
R7
R6
R3
R2
R4

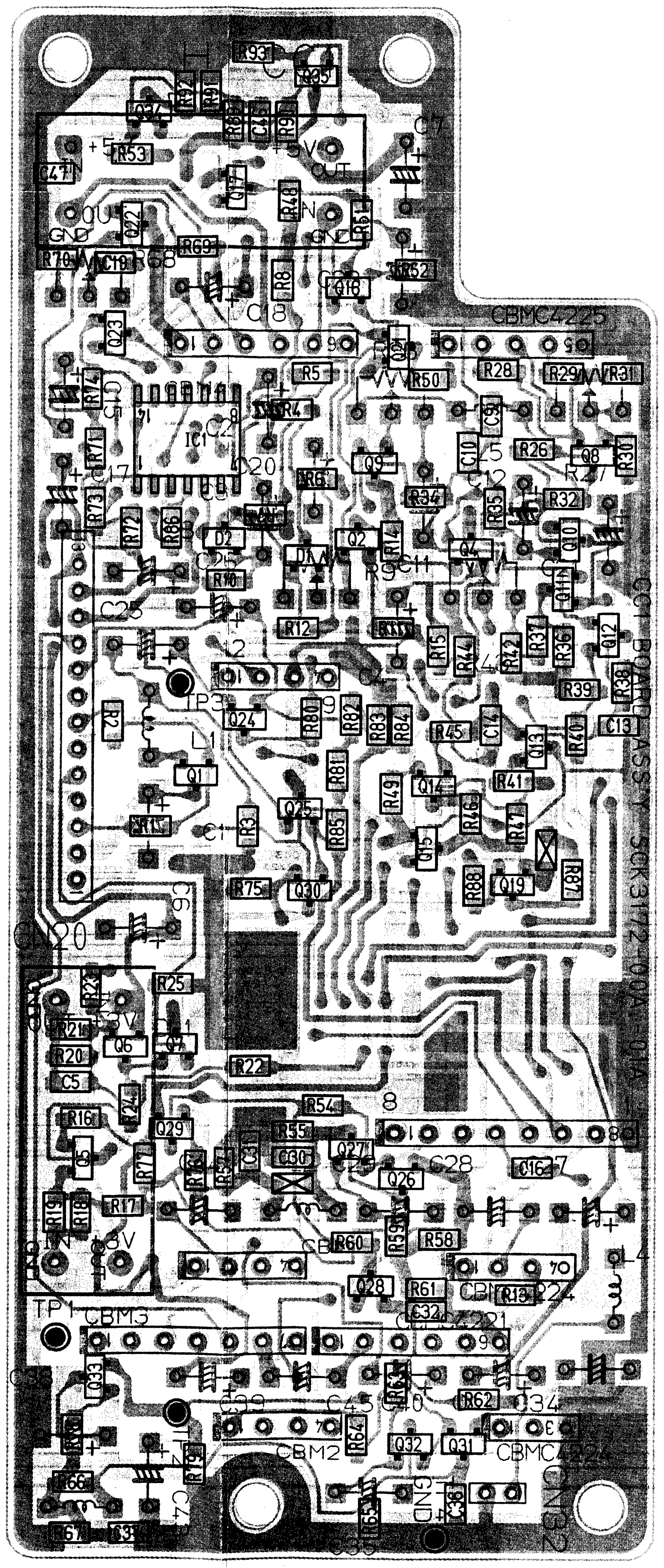
– AGC DET board (CBM3) [CBMC2288-C-00A] –


(A)
Q3
Q2
Q6
Q5
Q4
R3
R2
R4
R1
Q1
R8
R7
R6
R5
(B)
IC1

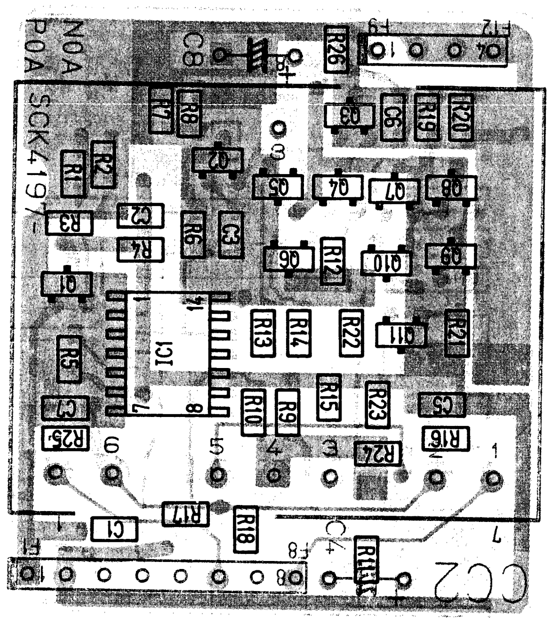
– H CONTOUR board (CBM4) [CBMC2288-D-01A] –


Q1
R5
R10
R13
R12
R11
Q3
Q2

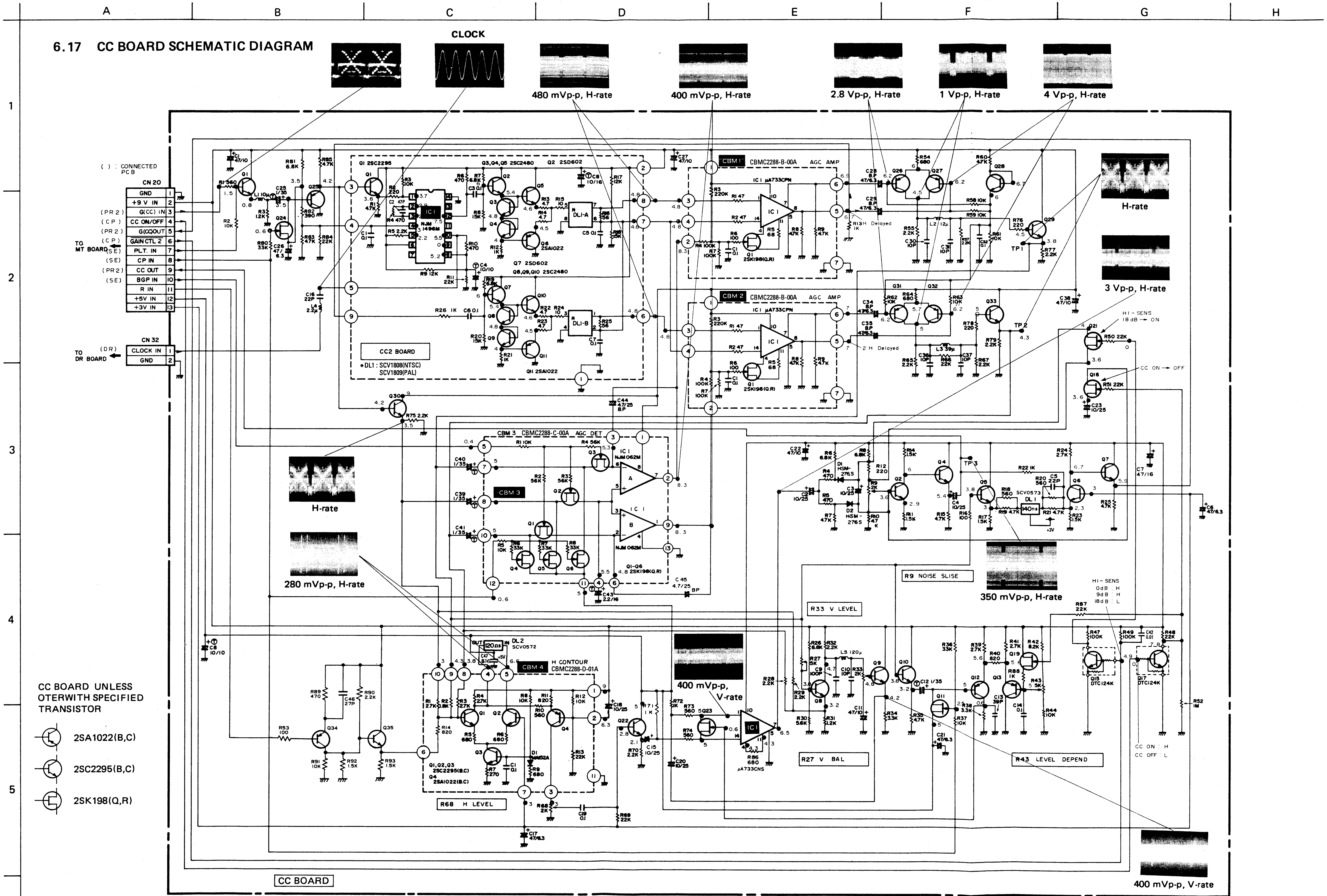
– CC1 board –


CBMC4225
IC1
TP3
TP1
CBM3
CBM2
CBMC4221
CN20
CN32

– CC2 board –

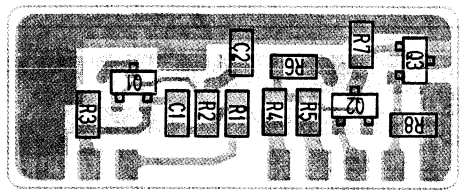


6.17 CC BOARD SCHEMATIC DIAGRAM


A
B
C
D
E
F
G
H
1
2
3
4
5
6
CLOCK
480 mVp-p, H-rate
400 mVp-p, H-rate
2.8 Vp-p, H-rate
1 Vp-p, H-rate
4 Vp-p, H-rate
H-rate
3 Vp-p, H-rate
H-rate
280 mVp-p, H-rate
350 mVp-p, H-rate
400 mVp-p, V-rate
400 mVp-p, V-rate
( ) : CONNECTED PCB
CN 20
GND 1
+9 V IN 2
(PR 2) G(CC) IN 3
(CP) CC ON/OFF 4
(PR 2) G(CC)OUT 5
GAIN CTL 2 6
TO MT BOARD (SE) PLT. IN 7
(SE) CP IN 8
(PR 2) CC OUT 9
(SE) BGP IN 10
R IN 11
+5V IN 12
+3V IN 13
CN 32
TO DR BOARD (DR) CLOCK IN 1
GND 2
Q1 2SC2295
Q3,Q4,Q5 2SC2480
Q2 2SD602
Q7 2SD602
Q8,Q9,Q10 2SC2480
Q11 2SA1022
IC1 NJM 1496M
DL1-A
DL1-B
CC2 BOARD
*DL1 : SCV1808(NTSC)
SCV1809(PAL)
CBM 1 CBMC2288-B-00A AGC AMP
IC1 μA733CPN
CBM 2 CBMC2288-B-00A AGC AMP
IC1 μA733CPN
Q1 2SK198(Q,R)
1H Delayed
2H Delayed
CBM 3 CBMC2288-C-00A AGC DET
IC1 NJM 062M
Q1-Q6 2SK198(Q,R)
CBM 4 H CONTOUR CBMC2288-D-01A
DL2 SCV0572
120ns
Q1,Q2,Q3 2SC2295(B,C)
Q4 2SA1022(B,C)
R68 H LEVEL
IC1 μA733CNS
R27 V BAL
R33 V LEVEL
R9 NOISE SLISE
R43 LEVEL DEPEND
DL1 SCV0573
140ns
TP 1
TP 2
TP 3
HI-SENS 18dB → ON
CC ON → OFF
HI-SENS
0dB : H
9dB : H
18dB : L
CC ON : H
CC OFF : L
Q15 DTC124K
Q17 DTC124K
CC BOARD
CC BOARD UNLESS OTERWITH SPECIFIED TRANSISTOR
2SA1022(B,C)
2SC2295(B,C)
2SK198(Q,R)

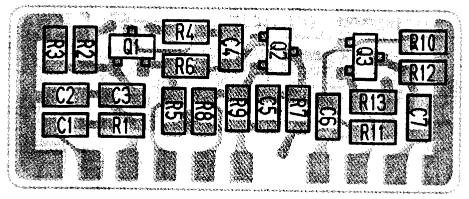
6.18-N SE CIRCUIT BOARDS (NTSC)

– R-Y board (CBM1) [CBMC2288-E-N0A] –
– B-Y board (CBM2) [CBMC2288-F-N0A] –



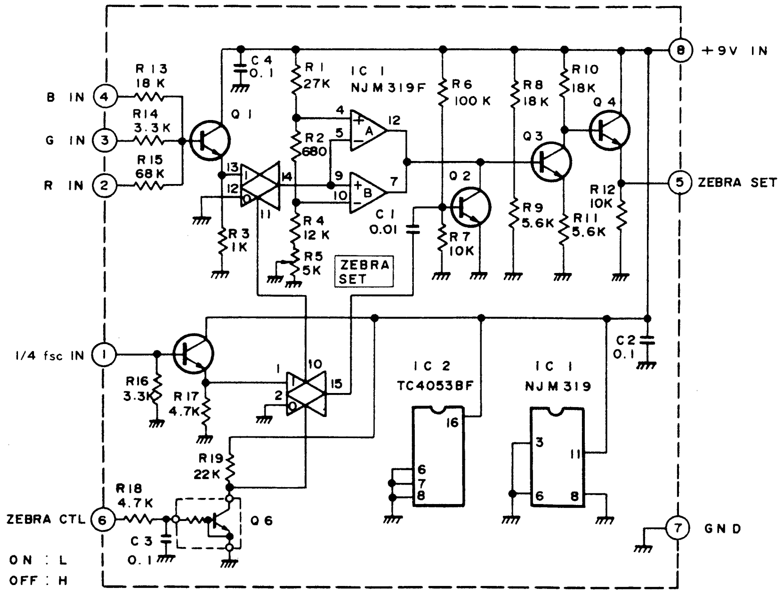
Q1
C2
R6
R7
Q3
R3
C1
R2
R1
R4
R5
Q2
R8

– SC SHIFT board (CBM3) [CBMC2288-G-00A] –



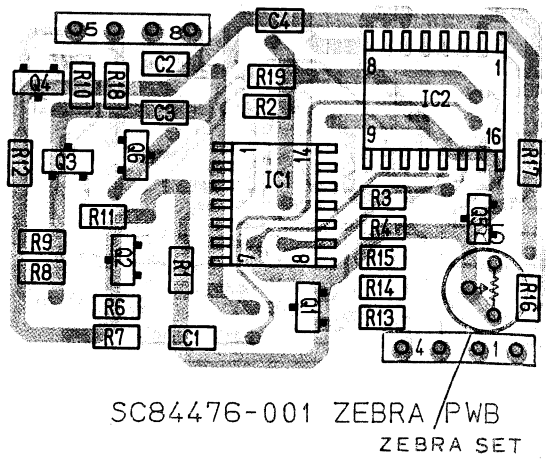
R3
R2
Q1
R4
R6
C4
Q2
Q3
R10
R12
C2
C3
C1
R1
R5
R8
C9
C5
R7
C6
R13
R11
C7

– ZEBRA SUB board –



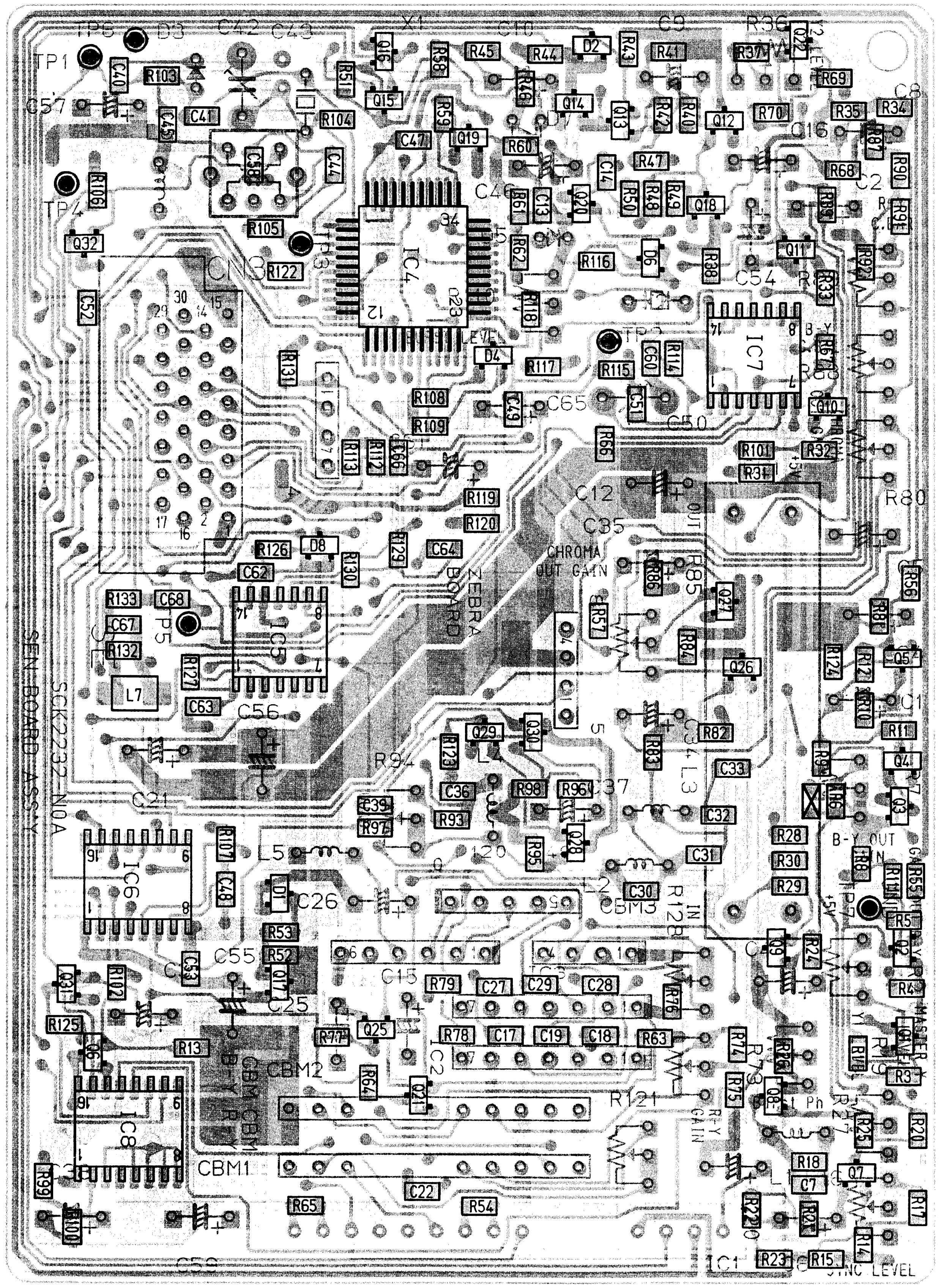
+9V IN
B IN
G IN
R IN
R13 18K
R14 3.3K
R15 68K
Q1
C4 0.1
R1 27K
IC1 NJM319F
R2 680
R3 1K
R4 12K
R5 5K
ZEBRA SET
C1 0.01
R6 100K
Q2
R7 10K
R8 18K
Q3
R9 5.6K
R10 18K
Q4
R11 5.6K
R12 10K
ZEBRA SET
1/4 fsc IN
R16 3.3K
R17 4.7K
R19 22K
IC2 TC4053BF
IC1 NJM319
C2 0.1
ZEBRA CTL
R18 4.7K
C3 0.1
Q6
ON : L
OFF : H
GND

Q1 – Q5 2SC2295 (B, C)
Q6 DTC124K



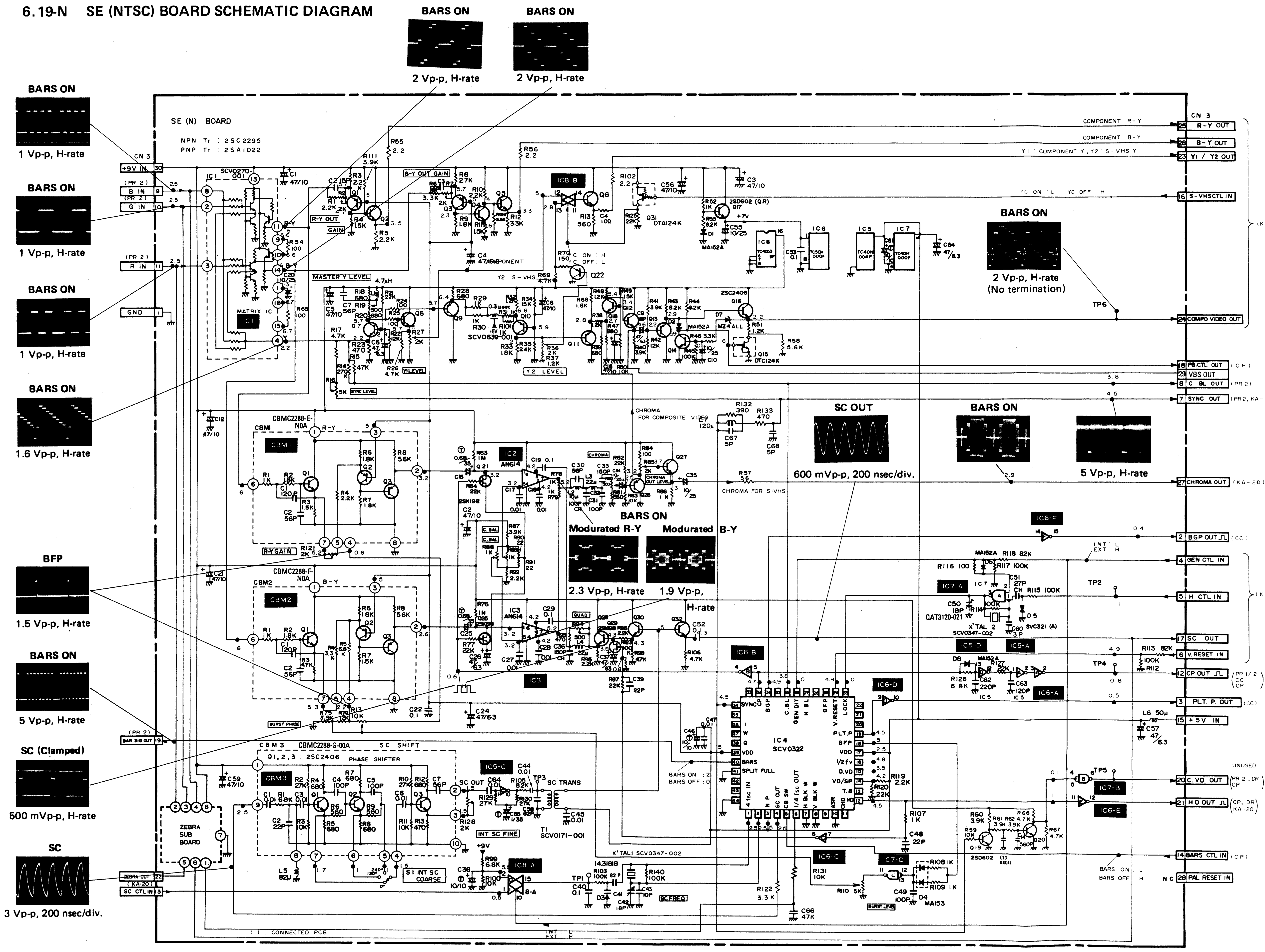
Q5
C4
Q4
R10
R18
C2
R19
R2
IC2
C3
Q6
R12
Q3
IC1
R17
R11
R3
R4
Q2
R5
R15
R14
R9
R8
Q1
R13
R16
R6
R7
C1
SC84476-001 ZEBRA PWB
ZEBRA SET

– SE-N board –



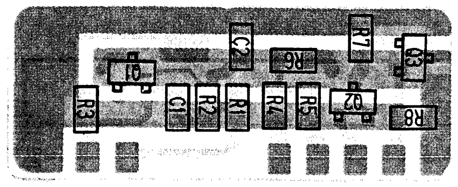
TP1
TP4
TP5
X1
CN3
IC4
IC5
IC6
IC7
IC8
L5
L7
CHROMA OUT GAIN
ZEBRA BOARD
SEN BOARD ASSY
SCK2232-N0A
CBM1
CBM2
CBM3
B-Y OUT
R-Y GAIN
SYNC LEVEL

6.19-N SE (NTSC) BOARD SCHEMATIC DIAGRAM


A
B
C
D
E
F
G
H
1
2
3
4
5
6
BARS ON
2 Vp-p, H-rate
BARS ON
2 Vp-p, H-rate
BARS ON
1 Vp-p, H-rate
BARS ON
1 Vp-p, H-rate
BARS ON
1 Vp-p, H-rate
BARS ON
1.6 Vp-p, H-rate
BFP
1.5 Vp-p, H-rate
BARS ON
5 Vp-p, H-rate
SC (Clamped)
500 mVp-p, H-rate
SC
3 Vp-p, 200 nsec/div.
BARS ON
2 Vp-p, H-rate
(No termination)
SC OUT
600 mVp-p, 200 nsec/div.
BARS ON
5 Vp-p, H-rate
BARS ON
Moduraled R-Y
Moduraled B-Y
2.3 Vp-p, H-rate
1.9 Vp-p, H-rate
SE (N) BOARD
NPN Tr : 2SC2295
PNP Tr : 2SA1022
CN 3
+9V IN
B IN
G IN
R IN
GND
BAR SIG OUT
ZEBRA OUT
SC CTL IN
(PR 2)
(KA-20)
SCV0270-001
IC1
MATRIX IC
B-Y OUT GAIN
R-Y OUT
GAIN
MASTER Y LEVEL
SYNC LEVEL
Y LEVEL
Y2 LEVEL
SCV0639-001
IC8-B
Q31 DTA124K
2SD602 (Q.R)
Q17
IC6
IC5
IC7
IC8
TC4053
TC40H000F
TC40H004F
COMPONENT R-Y
COMPONENT B-Y
Y1 : COMPONENT Y, Y2 : S-VHS Y
YC ON : L YC OFF : H
Y2 : S-VHS
TP6
2SC2406
Q16
DTC124K
CHROMA FOR COMPOSITE VIDEO
CHROMA FOR S-VHS
CBMC2288-E-N0A
CBM1
CBMC2288-F-N0A
CBM2
R-Y GAIN
IC2
AN614
IC3
AN614
2SK198
C BAL
CHROMA
CHROMA OUT LEVEL
QUAD
BURST PHASE
CBM3 CBMC2288-G-00A SC SHIFT
Q1,2,3 : 2SC2406 PHASE SHIFTER
CBM3
ZEBRA SUB BOARD
SC OUT
SC TRANS
T1 SCV0171-001
INT SC FINE
S1 INT SC COARSE
IC5-C
IC8-A
X'TAL1 SCV0347-002
14.31818
SC FREQ
IC4
SCV0322
SYNC
BGP
C.BL
GEN DIT
H.BL
GFP
V.RESET
LOCK
PLT.P
BFP
VDD
1/2 fv
D.VD
VD/SP
T.B
HD
BARS
SPLIT FULL
4 fsc IN
N P
SC OUT
CB SW
1/4 fsc OUT
H BLK W
V BLK W
ASR
BARS ON : 2
BARS OFF : 0
IC6-B
IC6-D
IC6-C
IC6-F
IC6-E
IC7-A
IC7-B
IC7-C
IC5-D
IC5-A
IC6-A
QAT3120-021
X'TAL 2 SCV0347-002
SVC321 (A)
MA152A
MA153
2SD602
BURST LEVEL
INT : L
EXT : H
TP2
TP4
TP5
TP1
TP3
R-Y OUT
B-Y OUT
Y1 / Y2 OUT
S-VHSCTL IN
COMPO VIDEO OUT
PB.CTL OUT
VBS OUT
C. BL OUT
SYNC OUT
CHROMA OUT
BGP OUT
GEN CTL IN
H CTL IN
SC OUT
V.RESET IN
CP OUT
PLT. P. OUT
+5 V IN
C. VD OUT
H D OUT
BARS CTL IN
PAL RESET IN
(KA-20)
(CP)
(PR 2)
(PR 2, KA-20)
(CC)
(PR 1/2 CC CP)
UNUSED
(PR 2, DR CP)
(CP, DR KA-20)
BARS ON : L
BARS OFF : H
N C
( ) CONNECTED PCB

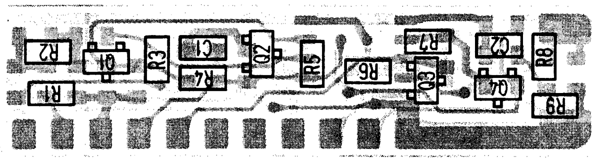
6.18-P SE CIRCUIT BOARDS (PAL)

– R-Y board (CBM1) [CBMC2288-E-P0A] –
– B-Y board (CBM2) [CBMC2288-F-P0A] –

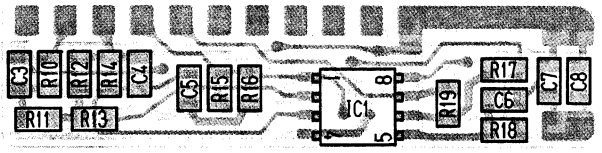

IC2
R6
R7
Q3
Q1
R3
C1
R2
R1
R4
R5
Q2
R8

– OFFSET board (CBM3) [CBMC2288-L-00A] –

(A)

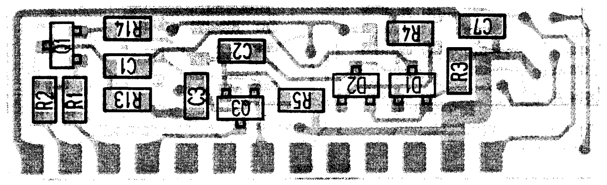

R2
Q1
R3
C1
C2
R5
R6
R7
Q2
R8
R1
R4
Q3
Q4
R9

(B)

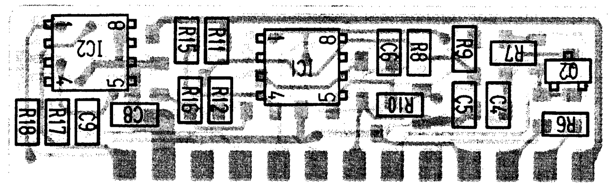

C3
R10
R12
R14
C4
C5
R15
R16
IC1
R17
C7
C8
R11
R13
R19
C6
R18

– LIMITTER board (CBM4) [CBMC2288-M-00A] –

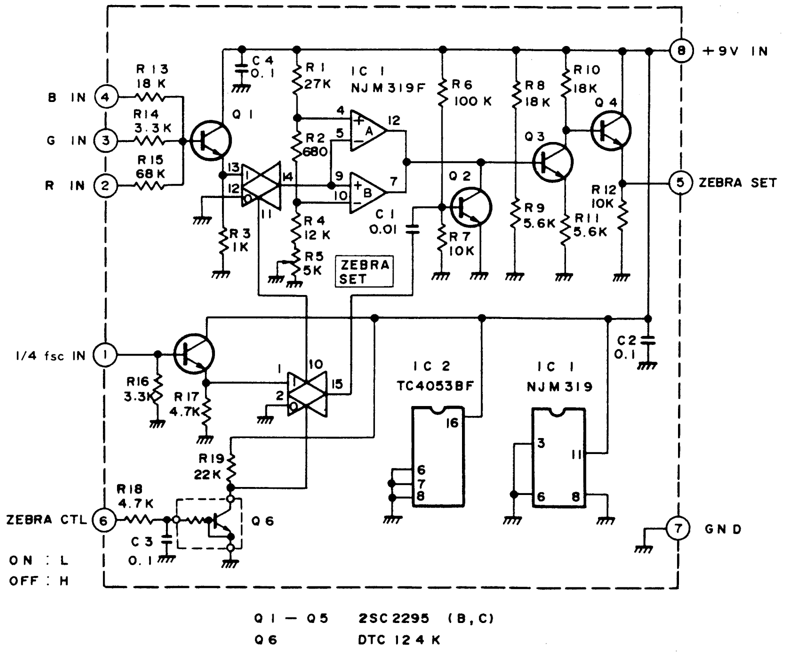
(A)

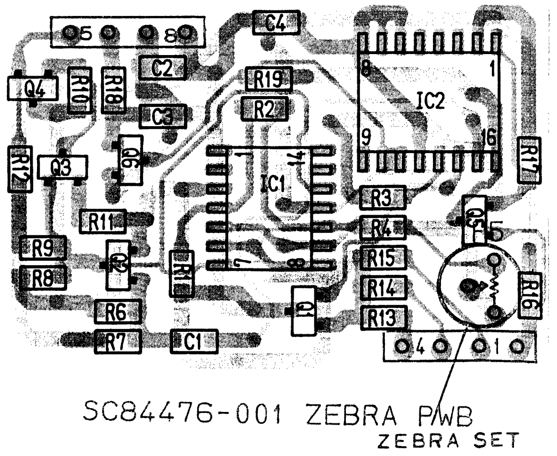

R14
C2
R4
C7
C1
R3
R2
R1
R13
C3
Q3
R5
Q2
Q1

(B)

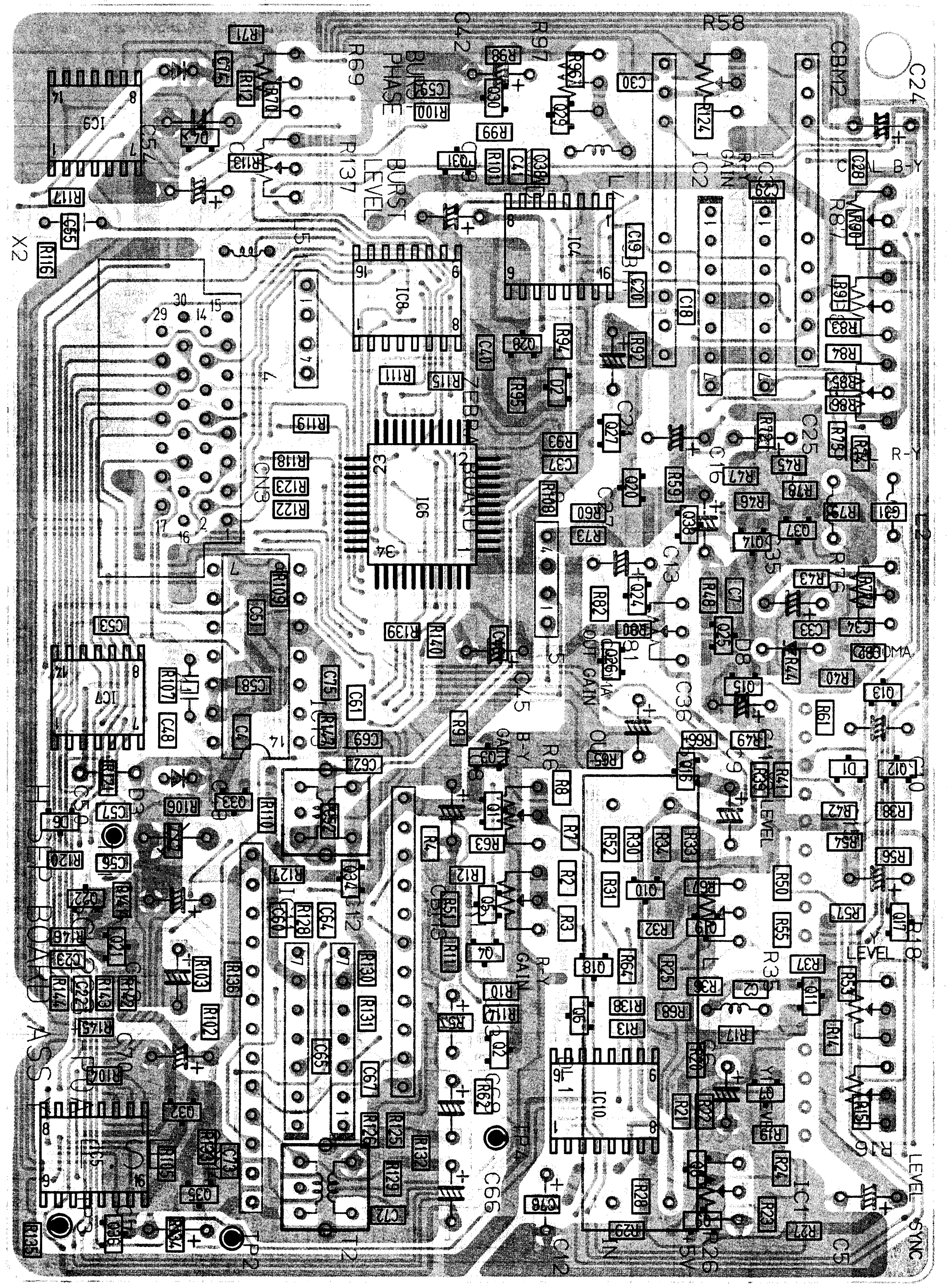

IC2
R15
R11
IC1
C6
R8
R9
R7
Q2
R18
R17
C9
C8
R16
R12
R10
C5
C4
R6

– ZEBRA SUB board –

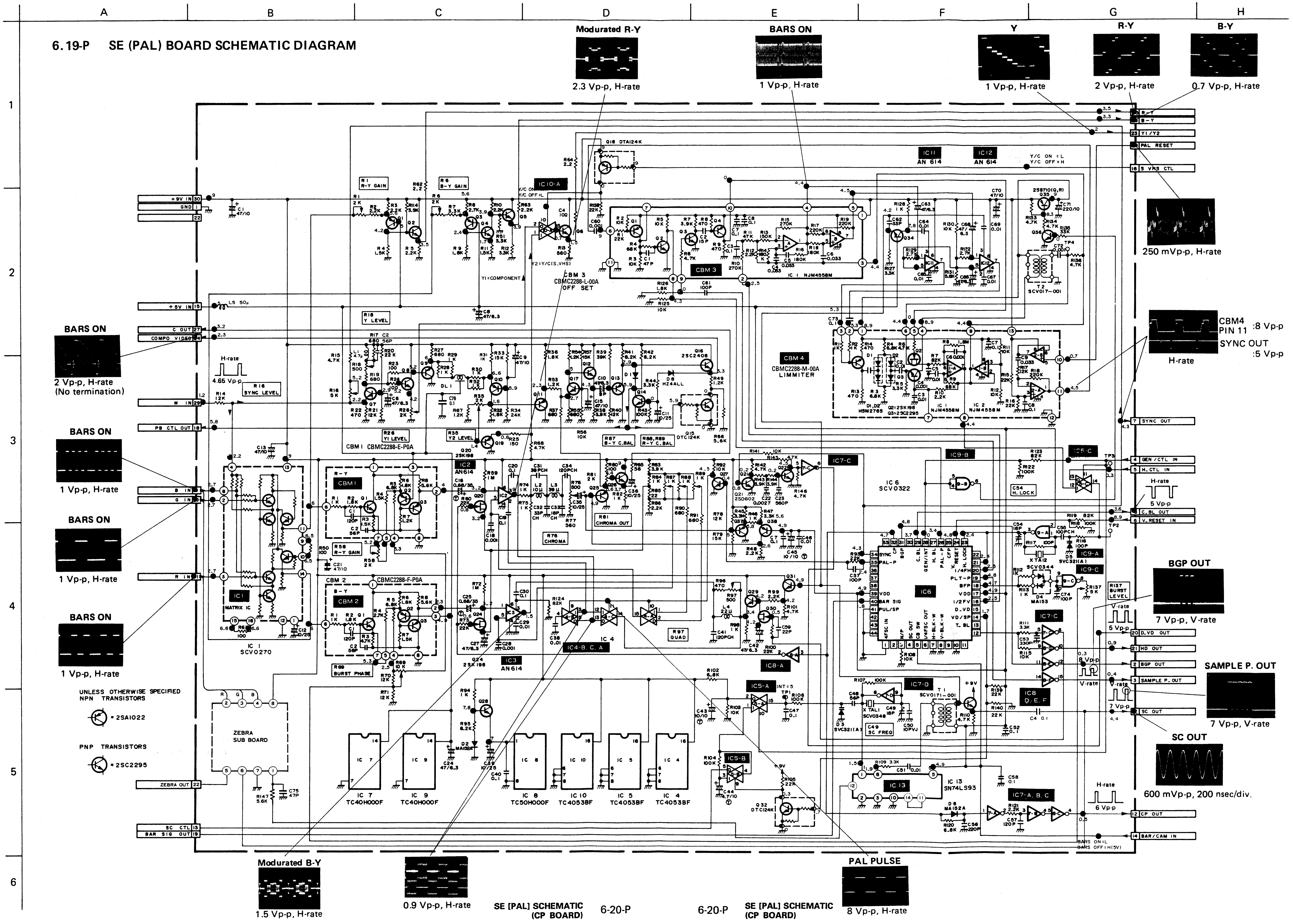

B IN 4
G IN 3
R IN 2
R13 18K
R14 3.3K
R15 68K
C4 0.1
Q1
R1 27K
IC1 NJM319F
R6 100K
R8 18K
R10 18K
Q4
8 +9V IN
R2 680
R3 1K
R4 12K
R5 5K
ZEBRA SET
C1 0.01
R7 10K
Q2
Q3
R9 5.6K
R11 5.6K
R12 10K
5 ZEBRA SET
1/4 fsc IN 1
R16 3.3K
R17 4.7K
R19 22K
IC2 TC4053BF
IC1 NJM319
C2 0.1
R18 4.7K
ZEBRA CTL 6
C3 0.1
Q6
7 GND
ON : L
OFF : H
Q1 – Q5 2SC2295 (B,C)
Q6 DTC124K


C4
C2
C3
R19
R2
IC2
IC1
Q4
R10
R18
Q3
Q6
R17
R11
Q2
R9
R8
R6
R7
C1
Q1
R3
R4
R15
R14
R13
R16
Q5
SC84476-001 ZEBRA PWB
ZEBRA SET

– SE-P board –

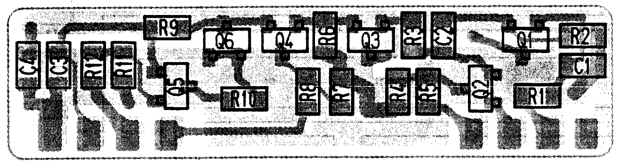

R58
CBM2
C24
BURST PHASE
BURST LEVEL
R69
R97
C42
R137
X2
IC9
IC8
IC4
IC2
IC6
IC7
IC10
IC1
CN3
ZEBRA BOARD
R-Y
B-Y
R-Y GAIN
B-Y GAIN
OUT GAIN
Y LEVEL
SYNC LEVEL
C66
R26
R16
R18
C5
TP2

6.19-P SE (PAL) BOARD SCHEMATIC DIAGRAM


A
B
C
D
E
F
G
H
1
2
3
4
5
6
Modurated R-Y
2.3 Vp-p, H-rate
BARS ON
1 Vp-p, H-rate
Y
1 Vp-p, H-rate
R-Y
2 Vp-p, H-rate
B-Y
0.7 Vp-p, H-rate
250 mVp-p, H-rate
CBM4 PIN 11 :8 Vp-p
SYNC OUT :5 Vp-p
H-rate
BARS ON
2 Vp-p, H-rate
(No termination)
BARS ON
1 Vp-p, H-rate
BARS ON
1 Vp-p, H-rate
BARS ON
1 Vp-p, H-rate
BGP OUT
7 Vp-p, V-rate
SAMPLE P. OUT
7 Vp-p, V-rate
SC OUT
600 mVp-p, 200 nsec/div.
Modurated B-Y
1.5 Vp-p, H-rate
0.9 Vp-p, H-rate
PAL PULSE
8 Vp-p, H-rate
+9V IN 30
GND 1
22
+5V IN 15
C OUT 27
COMPO VIDEO 24
W IN 29
PB CTL OUT 18
B IN
G IN
R IN
ZEBRA OUT 22
SC CTL 13
BAR SIG OUT 19
R-Y
B-Y
23 Y1/Y2
PAL RESET
16 S VHS CTL
7 SYNC OUT
4 GEN/CTL IN
5 H. CTL IN
C. BL OUT
6 V. RESET IN
20 D. VD OUT
21 HD OUT
2 BGP OUT
3 SAMPLE P. OUT
SC OUT
12 CP OUT
14 BAR/CAM IN
IC10-A
IC11 AN 614
IC12 AN 614
Y/C ON = L
Y/C OFF = H
Q16 DTA124K
CBM 3
CBM 3 CBMC2288-L-00A OFF SET
IC 1 NJM4558M
CBM 4
CBMC2288-M-00A LIMMITER
IC 1 NJM4558M
IC 2 NJM4558M
D1, D2 HSM2765
Q2: 2SK198
Q3: 2SC2295
T2 SCV017-001
2SB710(Q, R) Q35
CBM1 CBMC2288-E-P0A
R1 R-Y GAIN
R6 B-Y GAIN
R18 Y LEVEL
R16 SYNC LEVEL
R26 Y1 LEVEL
R36 Y2 LEVEL
R67 B-Y C. BAL
R88, R89 R-Y C. BAL
R81 CHROMA OUT
R76 CHROMA
Q15 DTC124K
Q16 2SC2406
D8 HZ4ALL
Y1=COMPONENT
Y2=Y/C(S, VHS)
H-rate
4.65 Vp-p
IC1 MATRIX IC
IC 1 SCV0270
CBM1
CBM 2 CBMC2288-F-P0A
CBM2
R58 R-Y GAIN
R69 BURST PHASE
IC2 AN614
IC3 AN614
Q20 2SK198
Q24 2SK198
IC4-B, C, A
IC 4
R97 QUAD
IC7-C
IC9-B
IC5-C
IC 6 SCV0322
IC6
C54 H. LOCK
IC9-A
IC9-C
XTAL2 SCV0344
D3 SVC321(A)
D4 MA153
R137 BURST LEVEL
IC7-C
IC8-A
IC5-A
IC5-B
IC7-D
IC8 D, E, F
T1 SCV0171-001
X TAL1 SCV0348
C49 SC FREQ
D3 SVC321(A)
IC 13
IC 13 SN74LS93
D6 MA152A
IC7-A, B, C
Q32 DTC124K
ZEBRA SUB BOARD
UNLESS OTHERWISE SPECIFIED
NPN TRANSISTORS
= 2SA1022
PNP TRANSISTORS
= 2SC2295
IC 7 TC40H000F
IC 9 TC40H000F
IC 8 TC50H000F
IC 10 TC4053BF
IC 5 TC4053BF
IC 4 TC4053BF
H-rate
5 Vp-p
V-rate
5 Vp-p
8 Vp-p
V-rate
H-rate
6 Vp-p
BARS ON=L
BARS OFF=H(5V)
TP1
TP2
TP3
TP4
INT=5

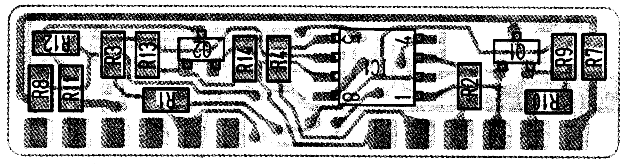
6.20 CP CIRCUIT BOARDS

– AW/AB DET1 board (CBM1/CBM2/CBM3) [CBMC2288-H-00A] –

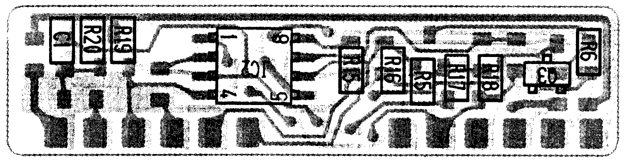

R9
Q6
Q4
R6
Q3
R3
R2
C1
R1
Q2
R10
Q5
Q1

– AW/AB DET2 board (CBM4) [CBMC2288-K-00A] –

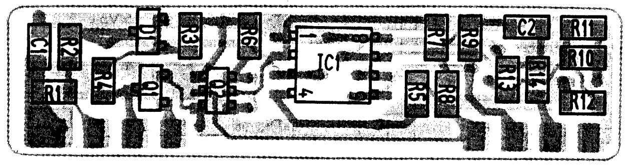
(A)


R12
R3
R13
Q3
R14
IC1
Q1
R9
R7
R8
R11
R1
R2
R10

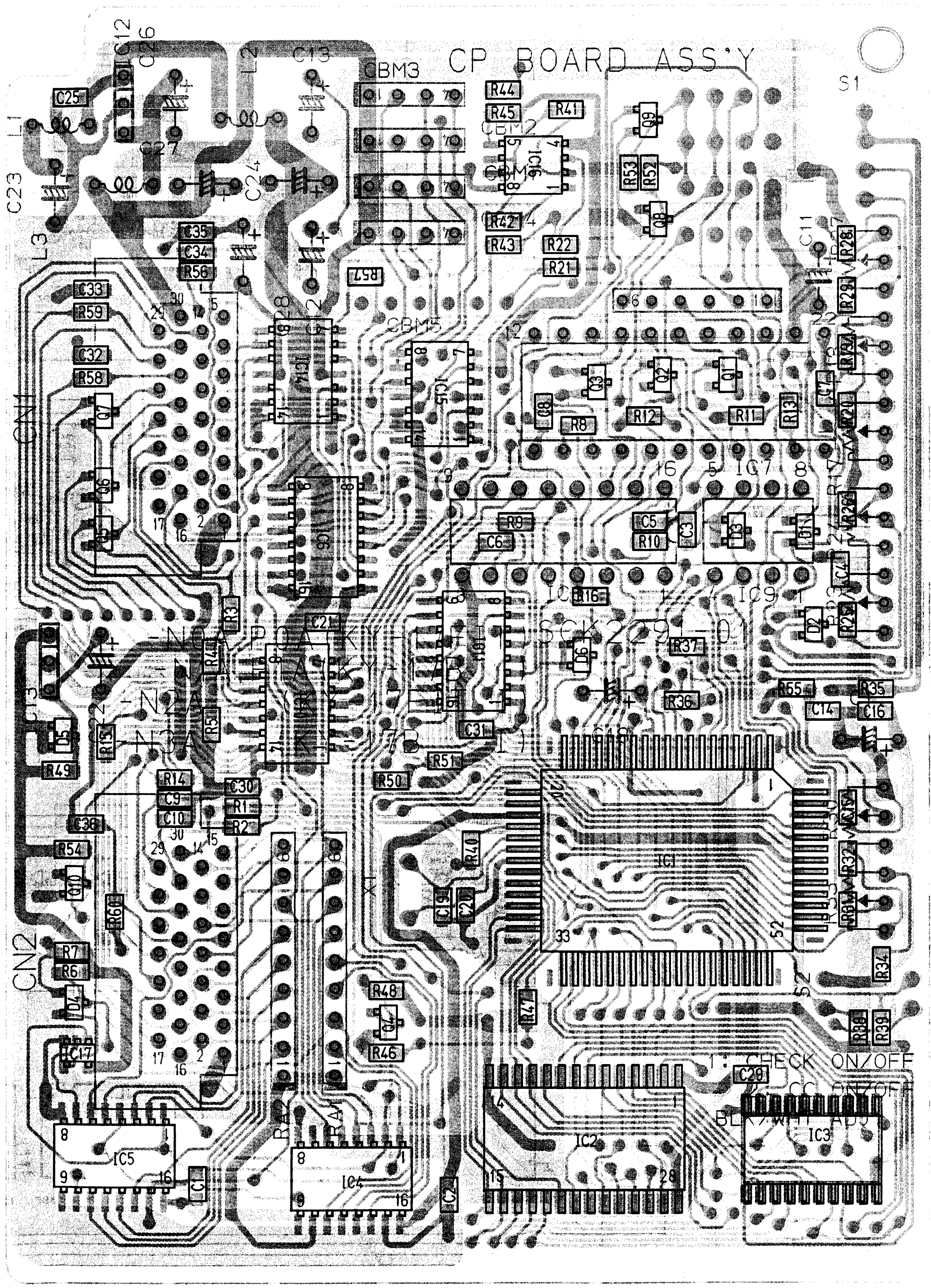
(B)


R20
R19
IC2
R16
R18
R17
C3
R6

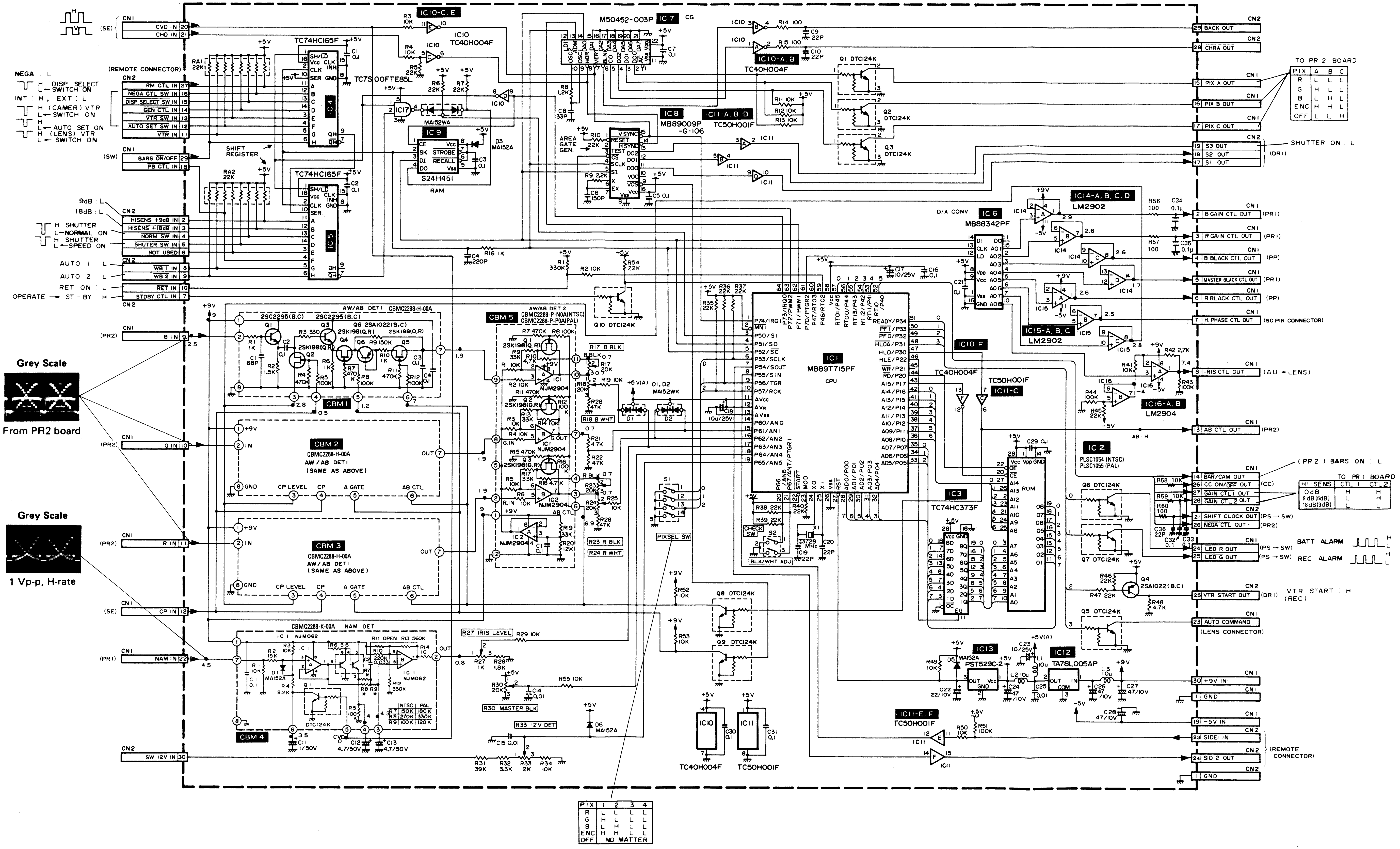
– NAM DET board (CBM5) [CBMC2288-P-N0A(NTSC), CBMC2288-P-P0A(PAL)] –


IC1
C2
R11
R10
R12
R1

– CP board –


CP BOARD ASS'Y
S1
CBM3
CBM2
CBM4
CBM5
C12
C26
C13
C25
C27
C23
C24
L1
L2
L3
C35
C34
R56
R57
C33
R59
C32
R58
CN1
CN2
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
R44
R45
R41
R42
R43
R22
R21
Q9
Q8
R53
R52
Q1
Q2
Q3
R12
R11
R13
R8
C5
R10
R9
C6
R37
R36
R55
C14
C16
C21
C31
R51
R50
R49
R14
C9
C10
C30
C38
R54
R60
R7
R6
R48
R46
R47
X1
C29
CHECK ON/OFF
CC ON/OFF
BLK/WHT ADJ
R34
R38
R39

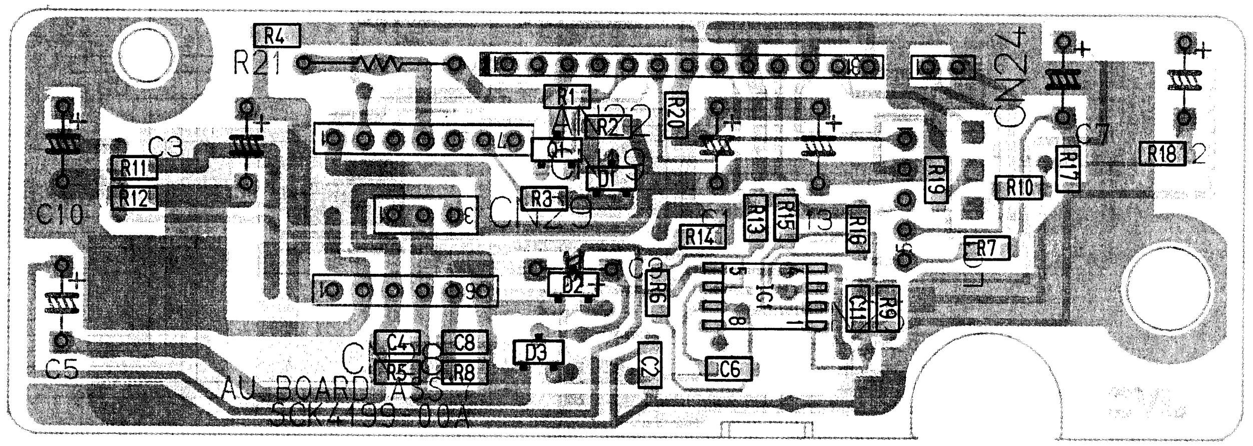
6.21 CP BOARD SCHEMATIC DIAGRAM


Grey Scale
From PR2 board
Grey Scale
1 Vp-p, H-rate
IC10-C, E
IC10 TC40H004F
M50452-003P IC7 CG
TC74HC165F
IC4
IC5
TC7S00FTE85L
IC17
MA152WA
IC9
S24H451
RAM
SHIFT REGISTER
IC8 MB89009P-G-106
IC11-A, B, D TC50H001F
IC10-A, B TC40H004F
Q1 DTC124K
Q2 DTC124K
Q3 DTC124K
D/A CONV. IC6 MB88342PF
IC14-A, B, C, D LM2902
IC15-A, B, C LM2902
IC16-A, B LM2904
IC1 MB89T715PF CPU
IC10-F TC40H004F
TC50H001F IC11-C
IC2 PLSC1054 (NTSC) PLSC1055 (PAL)
ROM
IC3 TC74HC373F
CBM 1 AW/AB DET1 CBMC2288-H-00A
CBM 2 CBMC2288-H-00A AW/AB DET1 (SAME AS ABOVE)
CBM 3 CBMC2288-H-00A AW/AB DET1 (SAME AS ABOVE)
CBM 4 CBMC2288-K-00A NAM DET
CBM 5 AW/AB DET 2 CBMC2288-P-N0A(NTSC) CBMC2288-P-P0A(PAL)
Q10 DTC124K
PIXSEL SW
BLK/WHT ADJ
R27 IRIS LEVEL
R30 MASTER BLK
R33 12V DET
R17 B BLK
R18 B WHT
R23 R BLK
R24 R WHT
IC13 PST529C-2
IC12 TA78L005AP
IC11-E, F TC50H001F
Q4 2SA1022(B,C)
Q5 DTC124K
Q6 DTC124K
Q7 DTC124K
Q8 DTC124K
Q9 DTC124K
CN1
CN2
(REMOTE CONNECTOR)
TO PR 2 BOARD
SHUTTER ON : L
TO PR 1 BOARD
BATT ALARM
REC ALARM
VTR START : H (REC)
(LENS CONNECTOR)
(50 PIN CONNECTOR)
(AU → LENS)
PIX 1 2 3 4
R L L L L
G H L L L
B L H L L
ENC H H L L
OFF L NO MATTER

6.22 AU/SW4 CIRCUIT BOARDS

1

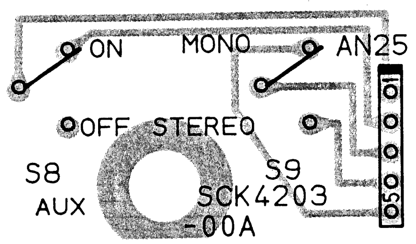
– AU board –


R4
R21
R1
R2
R20
AN22
Q1
D1
R3
CN29
C3
R11
R12
C10
C5
C4
C8
R5
R8
D3
D2
C9
R6
C2
C6
IC1
R14
R13
R15
R16
R19
R10
R17
R18
R7
C11
R9
C7
CN24
AU BOARD ASSY
SCK4199-00A

2

3

– SW4 board –

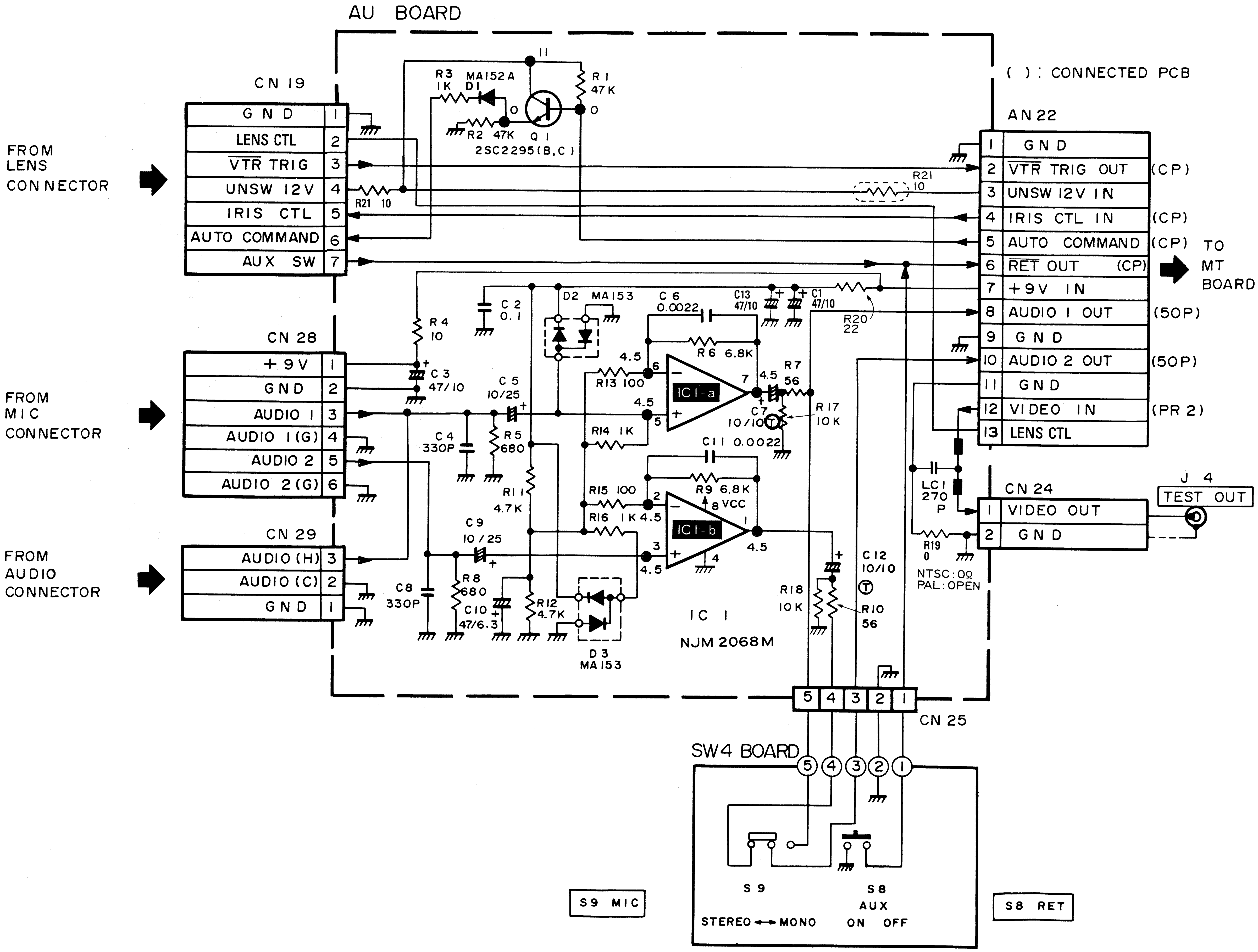

ON
MONO
AN25
OFF
STEREO
S8
AUX
S9
SCK4203
-00A

4

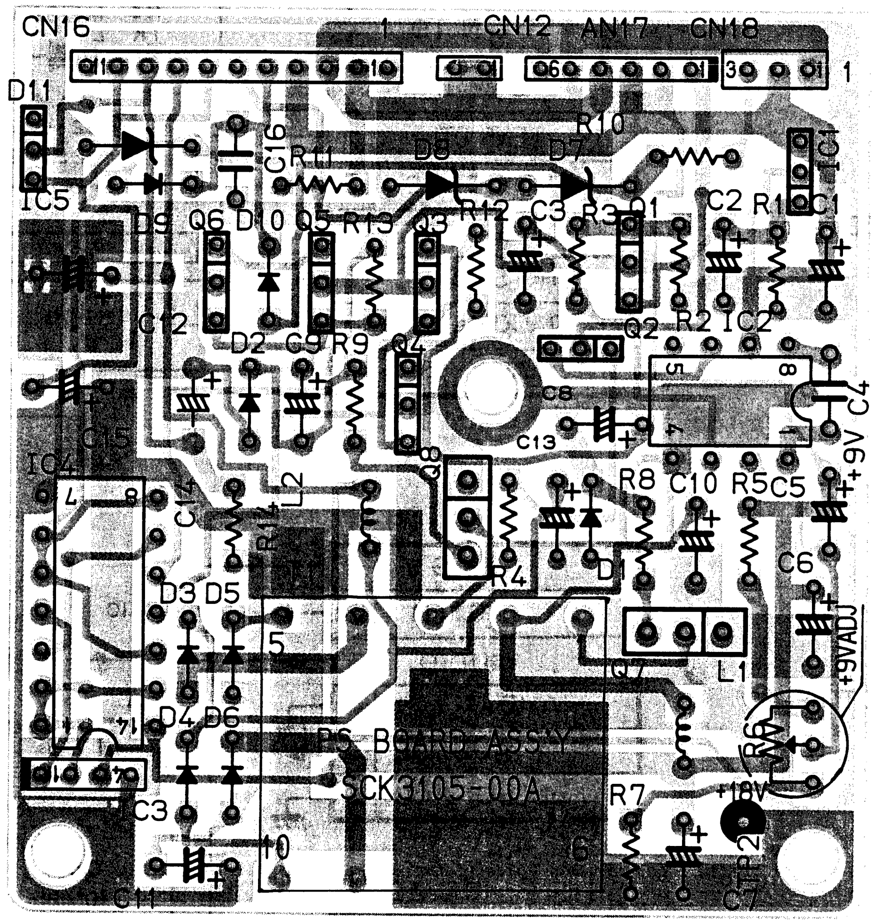
5

6

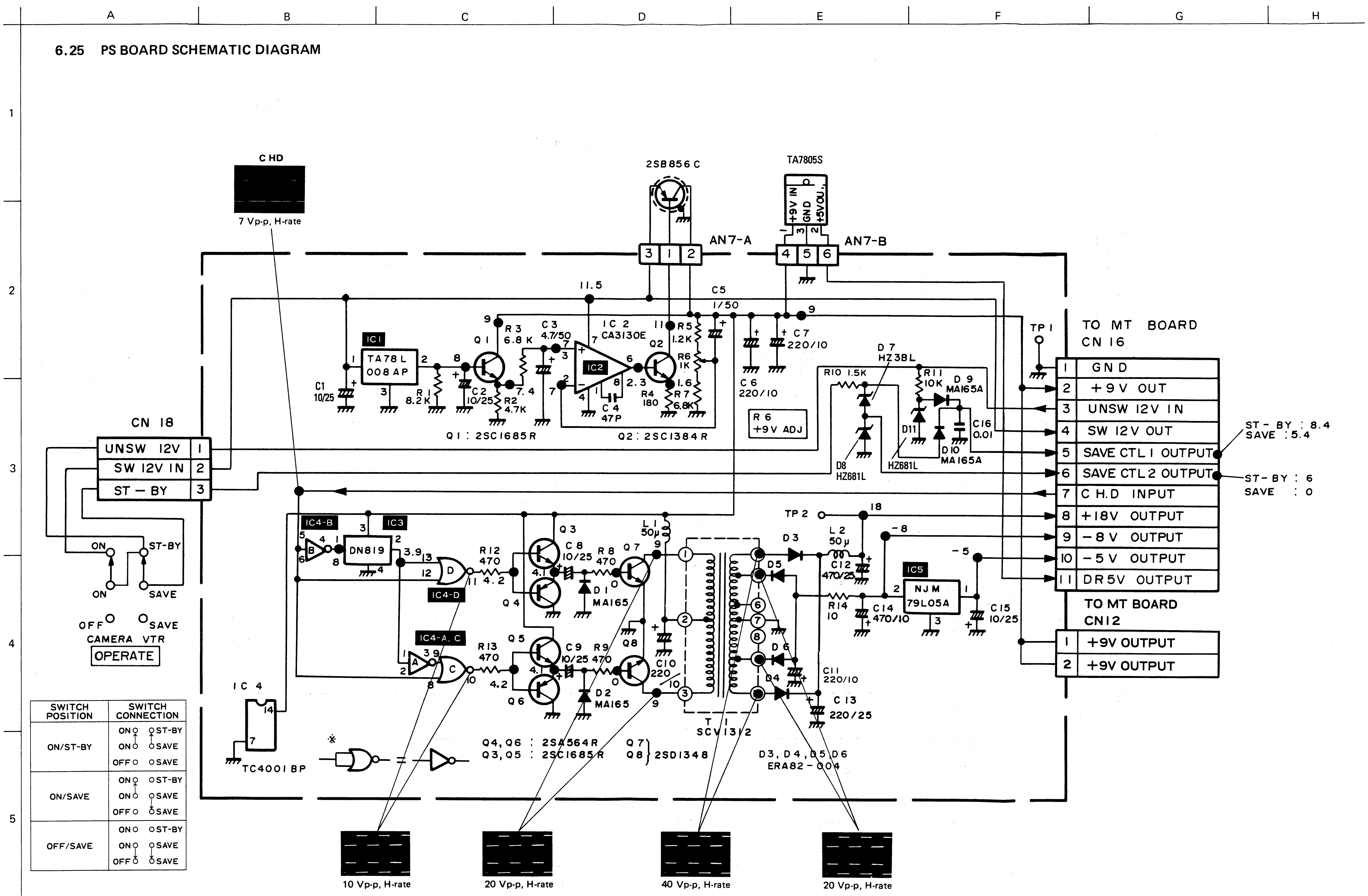
6.23 AU/SW4 BOARDS SCHEMATIC DIAGRAM


AU BOARD
CN 19
GND 1
LENS CTL 2
VTR TRIG 3
UNSW 12V 4
IRIS CTL 5
AUTO COMMAND 6
AUX SW 7
FROM LENS CONNECTOR
R21 10
R3 1K
MA152A D1
Q1 2SC2295(B,C)
R2 47K
R1 47K
11
0
( ) : CONNECTED PCB
AN22
1 GND
2 VTR TRIG OUT (CP)
3 UNSW 12V IN
4 IRIS CTL IN (CP)
5 AUTO COMMAND (CP)
6 RET OUT (CP)
7 +9V IN
8 AUDIO 1 OUT (50P)
9 GND
10 AUDIO 2 OUT (50P)
11 GND
12 VIDEO IN (PR 2)
13 LENS CTL
TO MT BOARD
R21 10
R20 22
C13 47/10
C1 47/10
C6 0.0022
C2 0.1
D2 MA153
R4 10
CN 28
+9V 1
GND 2
AUDIO 1 3
AUDIO 1(G) 4
AUDIO 2 5
AUDIO 2(G) 6
FROM MIC CONNECTOR
C3 47/10
C5 10/25
C4 330P
R5 680
R6 6.8K
R13 100
R14 1K
IC1-a
IC1-b
4.5
R7 56
C7 10/10
R17 10K
C11 0.0022
R15 100
R16 1K
R9 6.8K
8 VCC
R11 4.7K
CN 29
AUDIO (H) 3
AUDIO (C) 2
GND 1
FROM AUDIO CONNECTOR
C9 10/25
C8 330P
R8 680
C10 47/6.3
R12 4.7K
D3 MA153
IC 1 NJM2068M
R18 10K
C12 10/10
R10 56
LC1 270 P
R19 0
NTSC: 0Ω
PAL: OPEN
CN 24
1 VIDEO OUT
2 GND
J 4
TEST OUT
CN 25
5 4 3 2 1
SW4 BOARD
S9
STEREO ↔ MONO
S8
AUX
ON OFF
S9 MIC
S8 RET

6.24 PS CIRCUIT BOARD

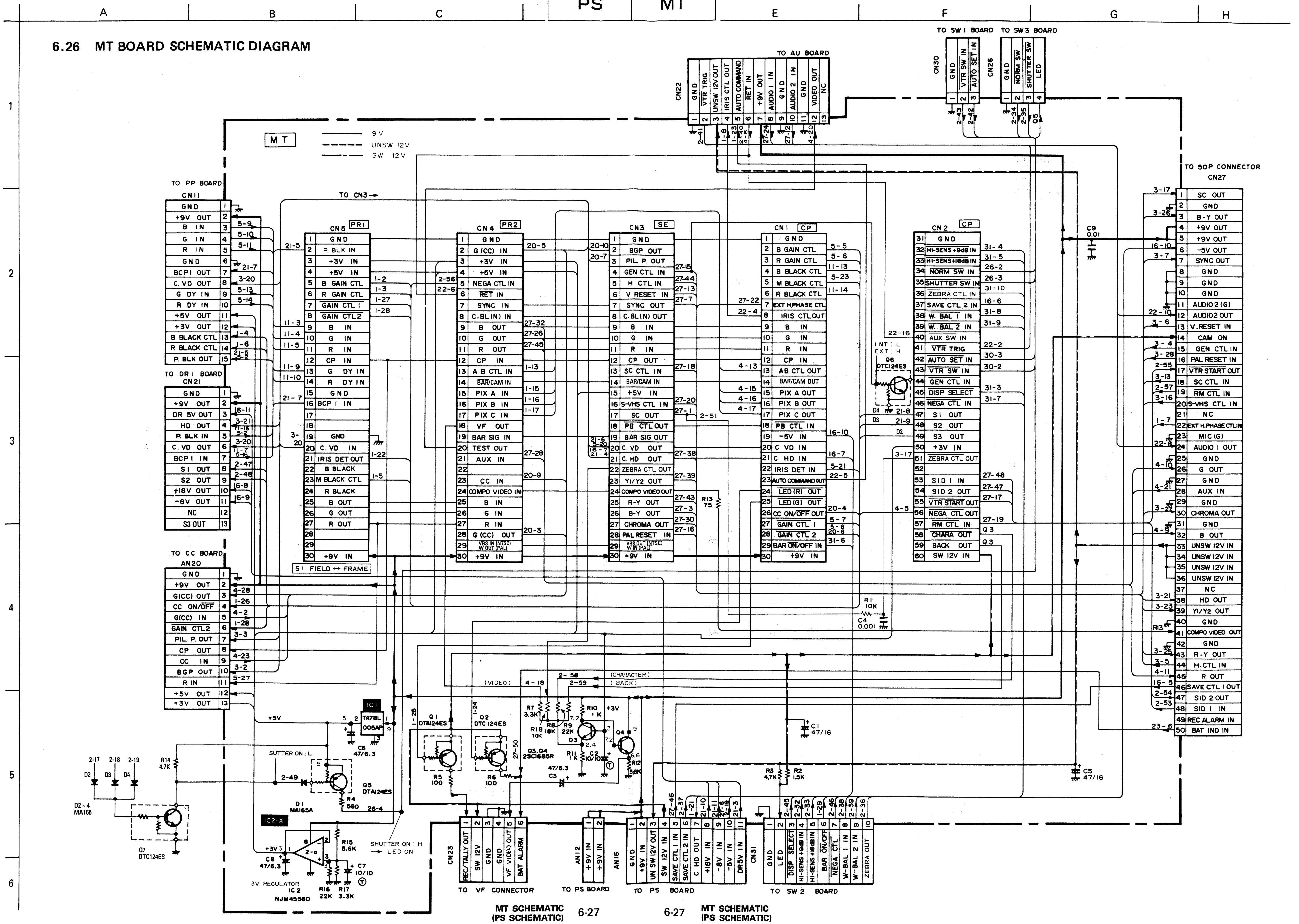

CN16
CN12
AN17
CN18
1
D11
IC5
C16
R11
D8
D7
R10
IC1
D9
Q6
D10
Q5
R13
Q3
R12
C3
R3
Q1
C2
R1
C1
C12
D2
C9
R9
Q4
Q2
R2
IC2
C8
C13
C4
+9V
C15
IC4
Q8
C14
R14
L2
R8
C10
R5
C5
R4
D1
C6
D3
D5
Q7
L1
+9VADJ
D4
D6
PS BOARD ASSY
SCK3105-00A
R6
+18V
C3
R7
C7
CR2
C11

6.25 PS BOARD SCHEMATIC DIAGRAM


A
B
C
D
E
F
G
H
1
2
3
4
5
6
C HD
7 Vp-p, H-rate
2SB856 C
TA7805S
+9V IN
GND
+5V OUT
1
3
2
AN7-A
AN7-B
3 1 2
4 5 6
11.5
C5
1/50
9
TP I
TO MT BOARD
CN 16
IC1
TA78L
008 AP
C1
10/25
R1
8.2K
C2
10/25
Q1
R3
6.8 K
R2
4.7K
7.4
C3
4.7/50
IC 2
CA3130E
IC2
C 4
47P
Q2
R5
1.2K
R6
1K
R4
180
R7
6.8K
1.6
2.3
C 6
220/10
C7
220/10
Q1 : 2SC1685R
Q2 : 2SC1384R
R 6
+9V ADJ
D 7
HZ3BL
R10 1.5K
R11
10K
D 9
MA165A
C16
0.01
D11
D 10
MA165A
D8
HZ681L
HZ681L
CN 18
UNSW 12V
SW 12V IN
ST – BY
1
2
3
ON
ST-BY
ON
SAVE
OFF
SAVE
CAMERA VTR
OPERATE
IC4-B
IC3
DN819
3.9
IC4-D
IC4-A, C
R12
470
4.2
R13
470
4.2
Q3
Q4
Q5
Q6
C 8
10/25
R 8
470
D1
MA165
C9
10/25
R9
470
D 2
MA165
Q7
Q8
L 1
50μ
C10
220
T 1
SCV1312
TP 2
18
-8
-5
D3
L2
50μ
C12
470/25
D5
D6
D4
R14
10
C14
470/10
IC5
NJM
79L05A
C15
10/25
C11
220/10
C 13
220/25
1 GND
2 +9 V OUT
3 UNSW 12V IN
4 SW 12V OUT
5 SAVE CTL I OUTPUT
6 SAVE CTL 2 OUTPUT
7 C H.D INPUT
8 +18V OUTPUT
9 -8 V OUTPUT
10 -5 V OUTPUT
11 DR5V OUTPUT
ST - BY : 8.4
SAVE : 5.4
ST - BY : 6
SAVE : 0
TO MT BOARD
CN12
1 +9V OUTPUT
2 +9V OUTPUT
IC 4
TC4001 BP
※
Q4, Q6 : 2SA564R
Q3, Q5 : 2SC1685R
Q7
Q8 } 2SD1348
D3, D4, D5, D6
ERA82 - 004
10 Vp-p, H-rate
20 Vp-p, H-rate
40 Vp-p, H-rate
20 Vp-p, H-rate

SWITCH POSITION	SWITCH CONNECTION
ON/ST-BY	ON○ ○ST-BY ON○ ○SAVE OFF○ ○SAVE
ON/SAVE	ON○ ○ST-BY ON○ ○SAVE OFF○ ○SAVE
OFF/SAVE	ON○ ○ST-BY ON○ ○SAVE OFF○ ○SAVE

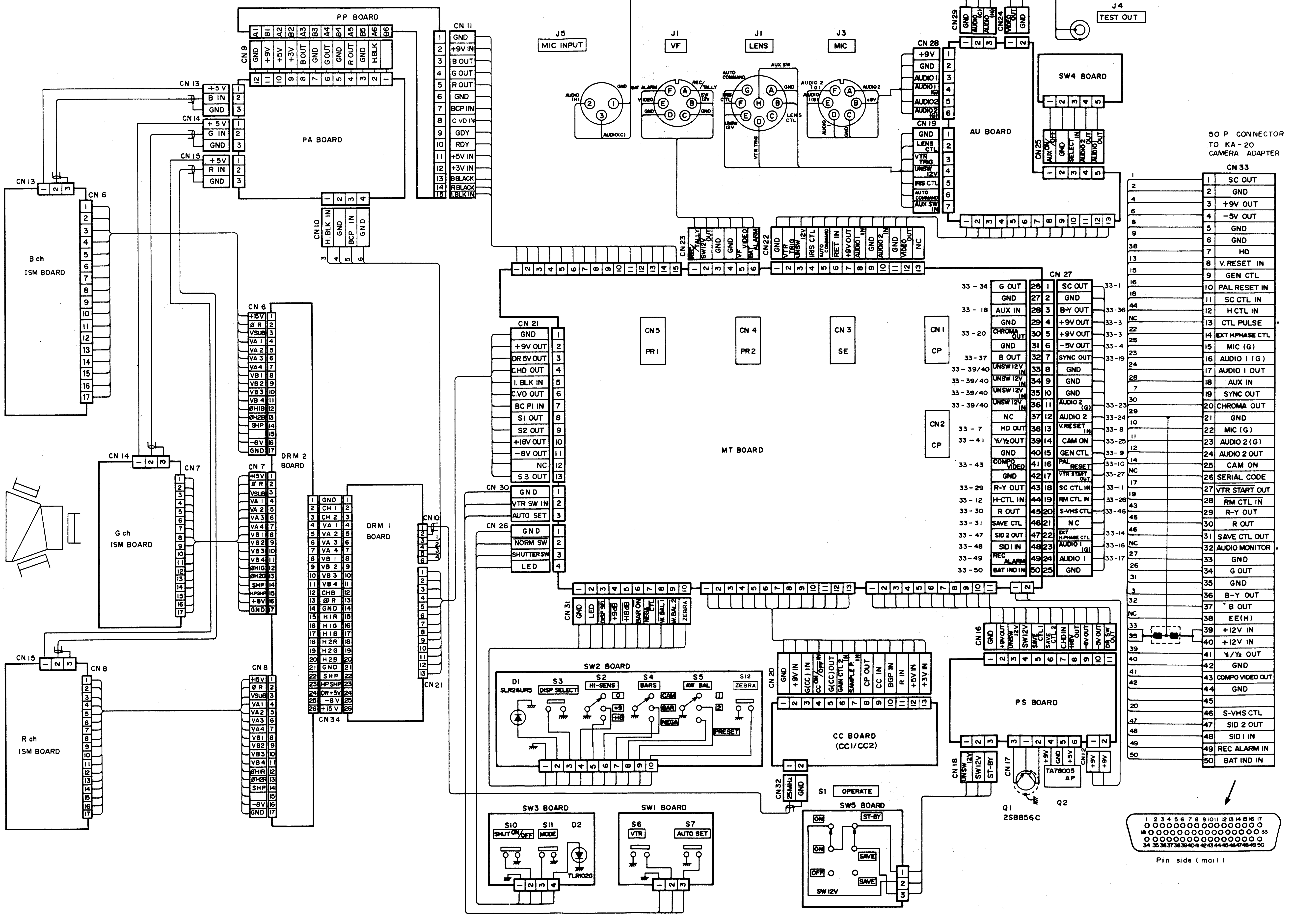
6.26 MT BOARD SCHEMATIC DIAGRAM


A
B
C
E
F
G
H
1
2
3
4
5
6
MT
9V
UNSW 12V
SW 12V
TO AU BOARD
CN22
GND
VTR TRIG
UNSW 12V OUT
IRIS CTL OUT
AUTO COMMAND
RET IN
+9V OUT
AUDIO 1 IN
GND
AUDIO 2 IN
GND
VIDEO OUT
NC
TO SW1 BOARD
CN30
GND
VTR SW IN
AUTO SET IN
TO SW3 BOARD
CN26
GND
NORM SW
SHUTTER SW
LED
TO PP BOARD
CN11
GND
+9V OUT
B IN
G IN
R IN
GND
BCP1 OUT
C. VD OUT
G DY IN
R DY IN
+5V OUT
+3V OUT
B BLACK CTL
R BLACK CTL
P. BLK OUT
TO DR1 BOARD
CN21
GND
+9V OUT
DR 5V OUT
HD OUT
P. BLK IN
C. VD OUT
BCP1 IN
S1 OUT
S2 OUT
+18V OUT
-8V OUT
NC
S3 OUT
TO CC BOARD
AN20
GND
+9V OUT
G(CC) OUT
CC ON/OFF
G(CC) IN
GAIN CTL2
PIL. P. OUT
CP OUT
CC IN
BGP OUT
R IN
+5V OUT
+3V OUT
TO CN3
CN5 PR1
GND
P. BLK IN
+3V IN
+5V IN
B GAIN CTL
R GAIN CTL
GAIN CTL 1
GAIN CTL 2
B IN
G IN
R IN
CP IN
G DY IN
R DY IN
GND
BCP 1 IN
GND
C. VD IN
IRIS DET OUT
B BLACK
M BLACK CTL
R BLACK
B OUT
G OUT
R OUT
+9V IN
S1 FIELD ↔ FRAME
CN4 PR2
GND
G (CC) IN
+3V IN
+5V IN
NEGA CTL IN
RET IN
SYNC IN
C. BL(N) IN
B OUT
G OUT
R OUT
CP IN
A B CTL IN
BAR/CAM IN
PIX A IN
PIX B IN
PIX C IN
VF OUT
BAR SIG IN
TEST OUT
AUX IN
CC IN
COMPO VIDEO IN
B IN
G IN
R IN
G (CC) OUT
VBS IN (NTSC) W OUT (PAL)
+9V IN
CN3 SE
GND
BGP OUT
PIL. P. OUT
GEN CTL IN
H CTL IN
V RESET IN
SYNC OUT
C.BL(N) OUT
B IN
G IN
R IN
CP OUT
SC CTL IN
BAR/CAM IN
+5V IN
S-VHS CTL IN
SC OUT
PB CTL OUT
BAR SIG OUT
C. VD OUT
C. HD OUT
ZEBRA CTL OUT
Y1/Y2 OUT
COMPO VIDEO OUT
R-Y OUT
B-Y OUT
CHROMA OUT
PAL RESET IN
VBS OUT (NTSC) W IN (PAL)
+9V IN
CN1 CP
GND
B GAIN CTL
R GAIN CTL
B BLACK CTL
M BLACK CTL
R BLACK CTL
EXT H.PHASE CTL
IRIS CTL OUT
B IN
G IN
R IN
CP IN
AB CTL OUT
BAR/CAM OUT
PIX A OUT
PIX B OUT
PIX C OUT
PB CTL IN
-5V IN
C VD IN
C HD IN
IRIS DET IN
AUTO COMMAND OUT
LED (R) OUT
LED (G) OUT
CC ON/OFF OUT
GAIN CTL 1
GAIN CTL 2
BAR ON/OFF IN
+9V IN
CN2 CP
GND
HI-SENS +9dB IN
HI-SENS +18dB IN
NORM SW IN
SHUTTER SW IN
ZEBRA CTL IN
SAVE CTL 2 IN
W. BAL 1 IN
W. BAL 2 IN
AUX SW IN
VTR TRIG
AUTO SET IN
VTR SW IN
GEN CTL IN
DISP SELECT
NEGA CTL IN
S1 OUT
S2 OUT
S3 OUT
+3V IN
ZEBRA CTL OUT
SID 1 IN
SID 2 OUT
VTR START OUT
NEGA CTL OUT
RM CTL IN
CHARA OUT
BACK OUT
SW 12V IN
INT : L
EXT : H
Q6
DTC124ES
R13
75
R1
10K
C4
0.001
C9
0.01
TO 50P CONNECTOR
CN27
SC OUT
GND
B-Y OUT
+9V OUT
+9V OUT
-5V OUT
SYNC OUT
GND
GND
GND
AUDIO 2 (G)
AUDIO2 OUT
V.RESET IN
CAM ON
GEN CTL IN
PAL RESET IN
VTR START OUT
SC CTL IN
RM CTL IN
S-VHS CTL IN
NC
EXT H.PHASE CTL IN
MIC (G)
AUDIO 1 OUT
GND
G OUT
GND
AUX IN
GND
CHROMA OUT
GND
B OUT
UNSW 12V IN
UNSW 12V IN
UNSW 12V IN
UNSW 12V IN
NC
HD OUT
Y1/Y2 OUT
GND
COMPO VIDEO OUT
GND
R-Y OUT
H. CTL IN
R OUT
SAVE CTL 1 OUT
SID 2 OUT
SID 1 IN
REC ALARM IN
BAT IND IN
(VIDEO)
(CHARACTER)
(BACK)
IC1
TA78L005AP
+5V
C6
47/6.3
SUTTER ON : L
Q5
DTA124ES
R4
560
D1
MA165A
R14
4.7K
D2
D3
D4
D2-4
MA165
Q7
DTC124ES
IC2-A
+3V3
C8
47/6.3
R15
5.6K
C7
10/10
3V REGULATOR
IC2
NJM4556D
R16
22K
R17
3.3K
SHUTTER ON : H
→ LED ON
Q1
DTA124ES
Q2
DTC124ES
R5
100
R6
100
R7
3.3K
R18
10K
R8
18K
R9
22K
R10
1K
Q3
Q4
Q3, Q4
2SC1685R
R11
1K
C2
10/10
C3
47/6.3
R12
5.6K
+3V
C1
47/16
R3
4.7K
R2
1.5K
C5
47/16
CN23
REC/TALLY OUT
SW 12V
GND
GND
VF VIDEO OUT
BAT ALARM
TO VF CONNECTOR
AN12
+9V IN
+9V IN
TO PS BOARD
AN16
GND
+9V IN
UN SW 12V OUT
SW 12V IN
SAVE CTL 1 IN
C HD OUT
+18V IN
-8V IN
-5V IN
DR5V IN
TO PS BOARD
CN31
GND
LED
DISP SELECT
HI-SENS +9dB IN
HI-SENS +18dB IN
BAR ON/OFF
NEGA CTL
W-BAL 1 IN
W-BAL 2 IN
ZEBRA OUT
TO SW 2 BOARD

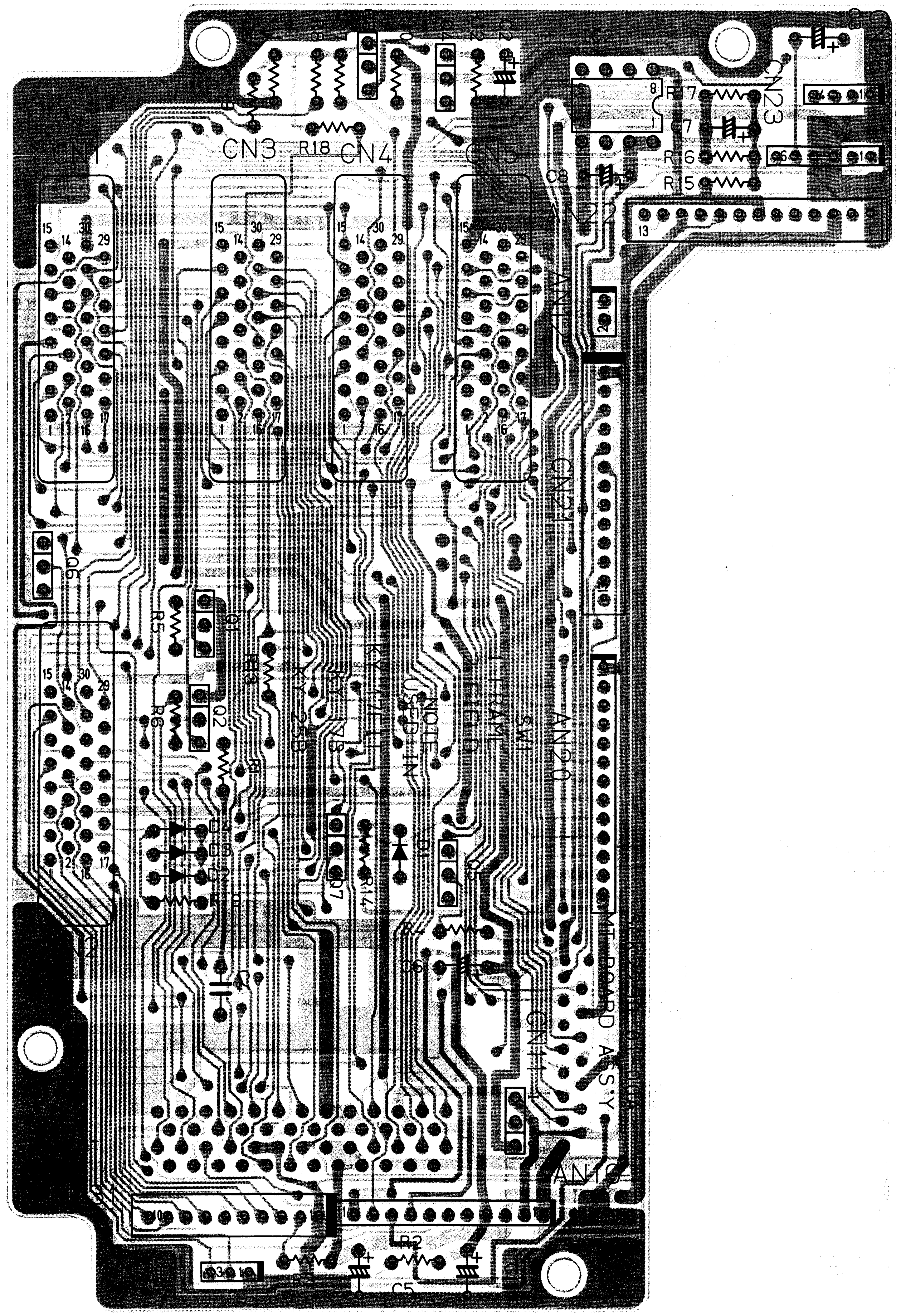
MT SCHEMATIC (PS SCHEMATIC) 6-27

6-27 MT SCHEMATIC (PS SCHEMATIC)

6.27 CAMERA HEAD OVERALL

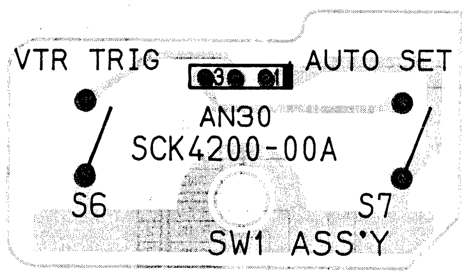

PP BOARD
PA BOARD
CN 9
CN 10
CN 11
CN 13
CN 14
CN 15
B ch ISM BOARD
G ch ISM BOARD
R ch ISM BOARD
CN 6
CN 7
CN 8
DRM 2 BOARD
DRM 1 BOARD
CN 34
CN 21
J5 MIC INPUT
J1 VF
J1 LENS
J3 MIC
J4 TEST OUT
CN 29
CN 24
CN 28
CN 19
AU BOARD
SW4 BOARD
CN 25
CN 23
CN 22
CN 5 PR 1
CN 4 PR 2
CN 3 SE
CN 1 CP
CN 2 CP
MT BOARD
CN 27
CN 30
CN 26
CN 31
SW2 BOARD
D1 SLR26UR5
S3 DISP SELECT
S2 HI-SENS
S4 BARS
S5 AW BAL
S12 ZEBRA
PRESET
CN 20
CC BOARD (CC1/CC2)
CN 16
PS BOARD
CN 18
CN 17
Q1 2SB856C
Q2 TA78005AP
CN 12
CN 32
S1 OPERATE
SW5 BOARD
ST-BY
SAVE
SW 12V
SW3 BOARD
S10 SHUT ON/OFF
S11 MODE
D2 TLR102G
SW1 BOARD
S6 VTR
S7 AUTO SET
50 P CONNECTOR TO KA-20 CAMERA ADAPTER
CN 33
1 SC OUT
2 GND
3 +9V OUT
4 -5V OUT
5 GND
6 GND
7 HD
8 V.RESET IN
9 GEN CTL
10 PAL RESET IN
11 SC CTL IN
12 H CTL IN
13 CTL PULSE
14 EXT H PHASE CTL
15 MIC (G)
16 AUDIO 1 (G)
17 AUDIO 1 OUT
18 AUX IN
19 SYNC OUT
20 CHROMA OUT
21 GND
22 MIC (G)
23 AUDIO 2 (G)
24 AUDIO 2 OUT
25 CAM ON
26 SERIAL CODE
27 VTR START OUT
28 RM CTL IN
29 R-Y OUT
30 R OUT
31 SAVE CTL OUT
32 AUDIO MONITOR
33 GND
34 G OUT
35 GND
36 B-Y OUT
37 B OUT
38 EE(H)
39 +12V IN
40 +12V IN
41 Y1/Y2 OUT
42 GND
43 COMPO VIDEO OUT
44 GND
45
46 S-VHS CTL
47 SID 2 OUT
48 SID 1 IN
49 REC ALARM IN
50 BAT IND IN
Pin side (mail)

6.28 MT CIRCUIT BOARD

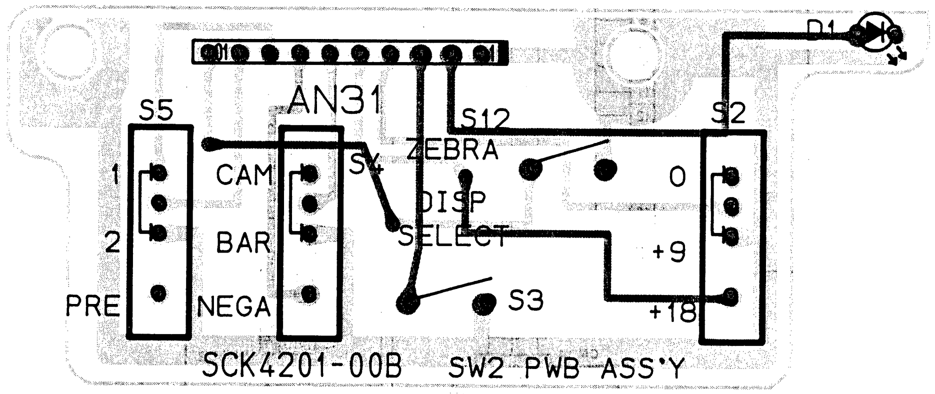

CN1
CN3
R18
CN4
CN5
R17
R16
R15
C7
C8
CN23
AN22
CN21
AN20
Q1
Q2
R5
R6
R3
D1
C6
CN11
C5
R2
MT BOARD ASS'Y

6.29 SW CIRCUIT BOARDS

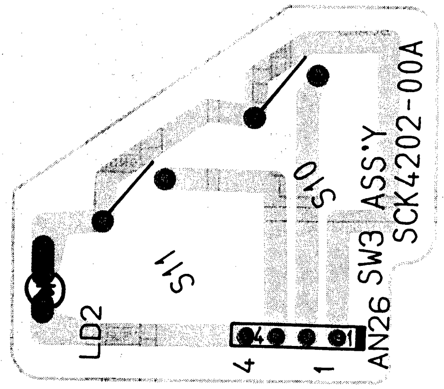
– SW1 board –


VTR TRIG
AUTO SET
AN30
SCK4200-00A
S6
S7
SW1 ASS'Y

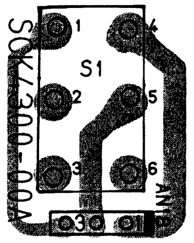
– SW2 board –


D1
AN31
S5
S12
S2
1
CAM
S4
ZEBRA
0
DISP
2
BAR
SELECT
+9
PRE
NEGA
S3
+18
SCK4201-00B
SW2 PWB ASS'Y

– SW3 board –

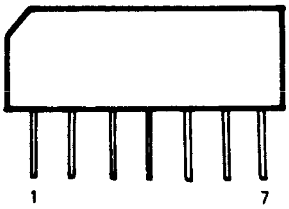

S10
S11
LD2
SW3 ASS'Y
SCK4202-00A
AN26
4
1

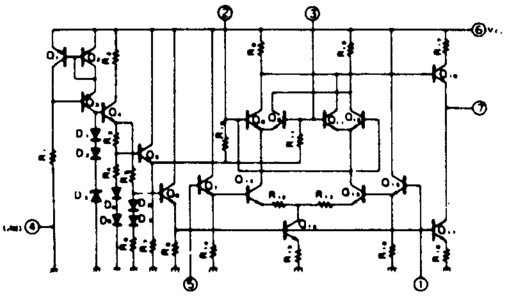
– SW5 board –



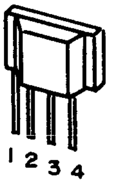
6.30 SCHEMATIC DIAGRAM OF ICs

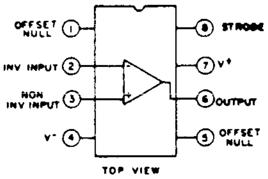
AN614 [MATSUSHITA]
(Balance Modulator)





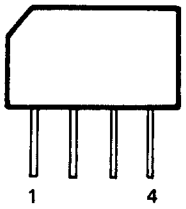
CA3130E [RCA]
(OP. Amp.)




OFFSET NULL ①
INV INPUT ②
NON INV INPUT ③
V⁻ ④
⑧ STROBE
⑦ V⁺
⑥ OUTPUT
⑤ OFFSET NULL
TOP VIEW

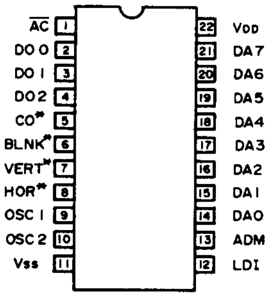
1 : Output
2 : Vcc
3 : Input
4 : GND

DN819 [MATSUSHITA]
(Integrated Injection Logic Frequency Divider)

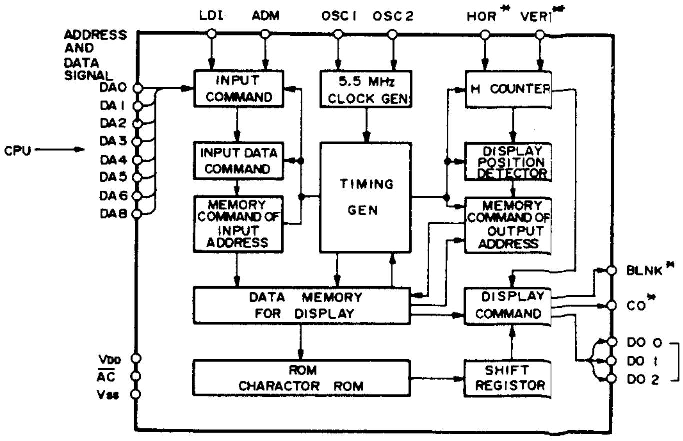


1 : INPUT
2 : OUTPUT
3 : Vcc
4 : GND

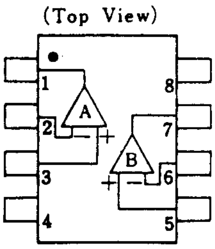
M50452-003P [MITSUBISHI]
(Character Generator)


$\overline{AC}$ 1
DO 0 2
DO 1 3
DO 2 4
CO* 5
BLNK* 6
VERT* 7
HOR* 8
OSC 1 9
OSC 2 10
Vss 11
22 VDD
21 DA7
20 DA6
19 DA5
18 DA4
17 DA3
16 DA2
15 DA1
14 DA0
13 ADM
12 LDI

1	$\overline{AC}$	AUTO CLEAR
2	DO 0	OUTPUT
3	DO 1	OUTPUT
4	DO 2	OUTPUT
5	CO	CHARACTOR OUTPUT
6	BLNK	BACKGROUND OUTPUT
7	VERT	VD INPUT
8	HOR	HD INPUT
9	OSC 1	RC TERMINAL
10	OSC 2	RC TERMINAL
11	Vss	GROUND
12	LDI	SHIFT CLOCK
13	ADM	ADDRESS DATA MODE
14 ⋮ 21	DA 0 ⋮ DA 7	DATA AND ADDRESS SIGNAL INPUT
22	VDD	+5V


LDI
ADM
OSC 1
OSC 2
HOR*
VERT*
ADDRESS AND DATA SIGNAL
DA0
DA1
DA2
DA3
DA4
DA5
DA6
DA8
CPU
INPUT COMMAND
5.5 MHz CLOCK GEN
H COUNTER
INPUT DATA COMMAND
TIMING GEN
DISPLAY POSITION DETECTOR
MEMORY COMMAND OF INPUT ADDRESS
MEMORY COMMAND OF OUTPUT ADDRESS
DATA MEMORY FOR DISPLAY
DISPLAY COMMAND
ROM CHARACTOR ROM
SHIFT REGISTOR
BLNK*
CO*
DO 0
DO 1
DO 2
VDD
$\overline{AC}$
Vss

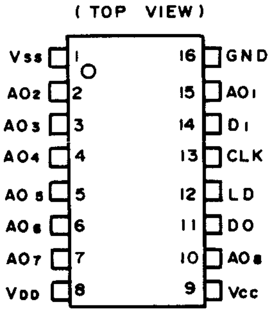
LM2904M [TEXAS]
(Dual OP. Amplifier)


(Top View)
1
2
3
4
5
6
7
8
A
B
+
−

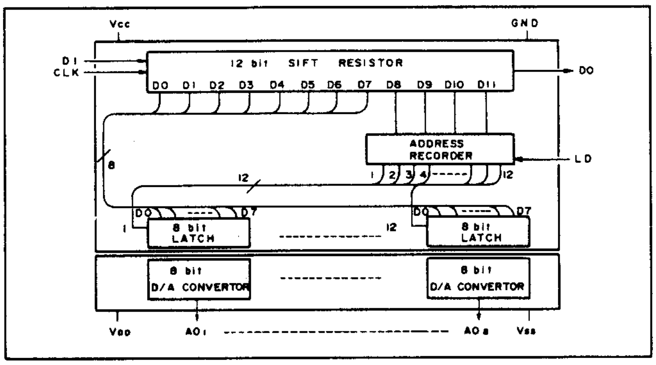
Pin

1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

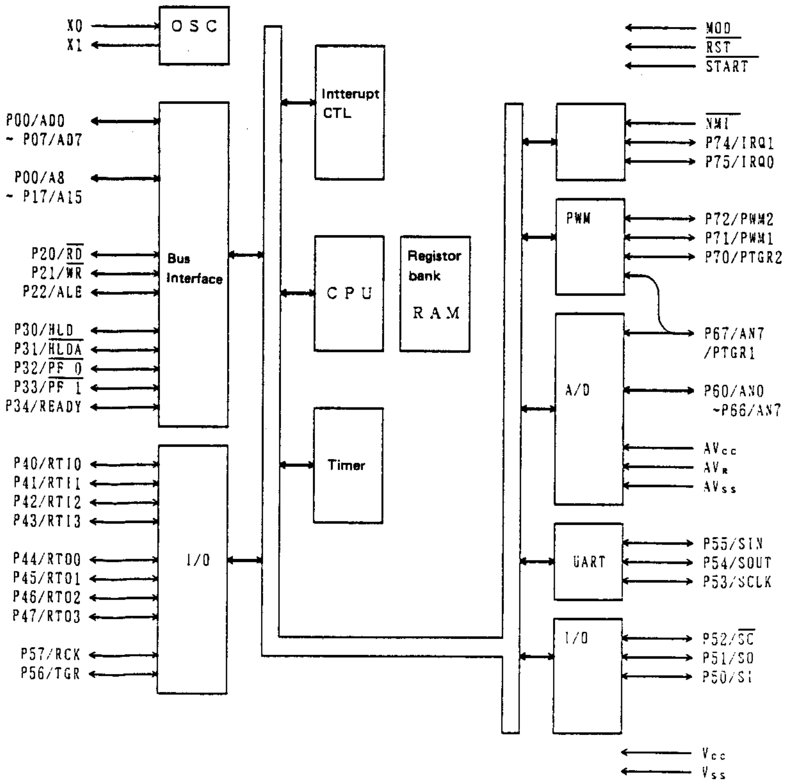
MB88342PF [FUJITSU]
(D/A Converter)

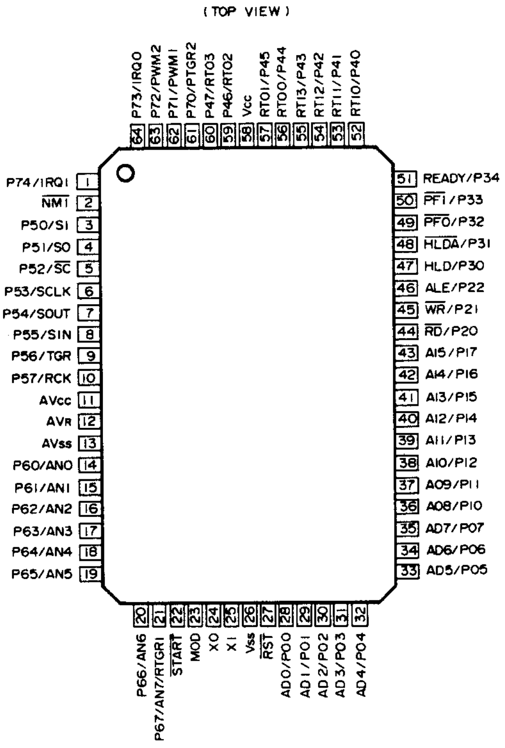

(TOP VIEW)
Vss 1
AO2 2
AO3 3
AO4 4
AO5 5
AO6 6
AO7 7
VDD 8
16 GND
15 AO1
14 DI
13 CLK
12 LD
11 DO
10 AO8
9 Vcc

(FPT-16P-M02)

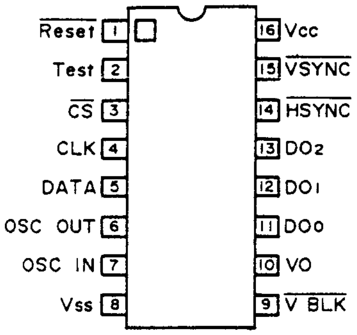

Vcc
GND
DI
CLK
12 bit SIFT RESISTOR
D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11
DO
ADDRESS RECORDER
LD
8
12
1 2 3 4 12
D0 D7
1
8 bit LATCH
12
8 bit LATCH
8 bit D/A CONVERTOR
8 bit D/A CONVERTOR
VDD
AO1
AO8
Vss

MB89T715PF [FUJITSU]
(8-bit Microcomputer)

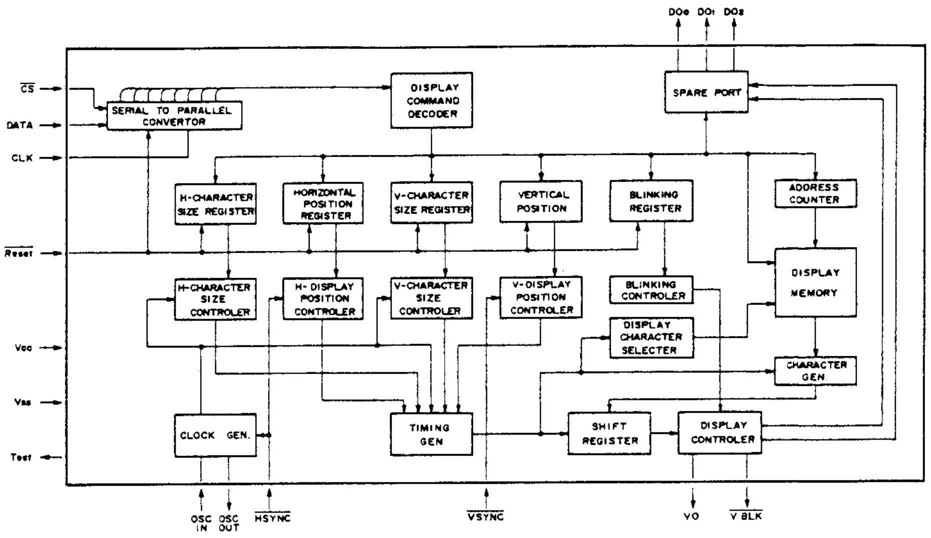

X0
X1
OSC
P00/AD0
~ P07/AD7
P00/A8
~ P17/A15
P20/RD
P21/WR
P22/ALE
P30/HLD
P31/HLDA
P32/PF 0
P33/PF 1
P34/READY
Bus Interface
P40/RTI0
P41/RTI1
P42/RTI2
P43/RTI3
P44/RTO0
P45/RTO1
P46/RTO2
P47/RTO3
P57/RCK
P56/TGR
I/O
Intterupt CTL
CPU
Registor bank
RAM
Timer
MOD
RST
START
NMI
P74/IRQ1
P75/IRQ0
PWM
P72/PWM2
P71/PWM1
P70/PTGR2
P67/AN7
/PTGR1
A/D
P60/AN0
~P66/AN7
AVcc
AVR
AVss
UART
P55/SIN
P54/SOUT
P53/SCLK
I/O
P52/SC
P51/SO
P50/SI
Vcc
Vss


(TOP VIEW)
P74/IRQ1 1
NMI 2
P50/SI 3
P51/SO 4
P52/SC 5
P53/SCLK 6
P54/SOUT 7
P55/SIN 8
P56/TGR 9
P57/RCK 10
AVcc 11
AVR 12
AVss 13
P60/AN0 14
P61/AN1 15
P62/AN2 16
P63/AN3 17
P64/AN4 18
P65/AN5 19
20 P66/AN6
21 P67/AN7/RTGR1
22 START
23 MOD
24 X0
25 X1
26 Vss
27 RST
28 AD0/P00
29 AD1/P01
30 AD2/P02
31 AD3/P03
32 AD4/P04
33 AD5/P05
34 AD6/P06
35 AD7/P07
36 A08/P10
37 A09/P11
38 A10/P12
39 A11/P13
40 A12/P14
41 A13/P15
42 A14/P16
43 A15/P17
44 RD/P20
45 WR/P21
46 ALE/P22
47 HLD/P30
48 HLDA/P31
49 PF0/P32
50 PF1/P33
51 READY/P34
52 RTI0/P40
53 RTI1/P41
54 RTI2/P42
55 RTI3/P43
56 RTO0/P44
57 RTO1/P45
58 Vcc
59 P46/RTO2
60 P47/RTO3
61 P70/PTGR2
62 P71/PWM1
63 P72/PWM2
64 P73/IRQ0

MB89009P-G-106 [FUJITSU]
(Character Generator)

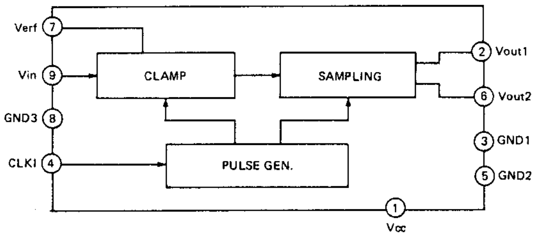


Reset 1
Test 2
CS 3
CLK 4
DATA 5
OSC OUT 6
OSC IN 7
Vss 8
16 Vcc
15 VSYNC
14 HSYNC
13 DO2
12 DO1
11 DO0
10 VO
9 V BLK



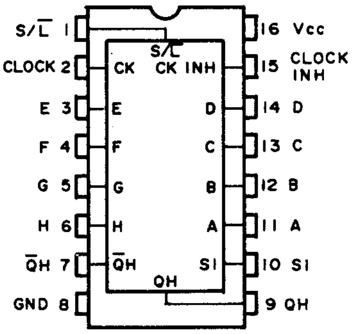
DO0 DO1 DO2
CS
DATA
CLK
Reset
Vcc
Vss
Test
SERIAL TO PARALLEL CONVERTOR
DISPLAY COMMAND DECODER
SPARE PORT
H-CHARACTER SIZE REGISTER
HORIZONTAL POSITION REGISTER
V-CHARACTER SIZE REGISTER
VERTICAL POSITION
BLINKING REGISTER
ADDRESS COUNTER
H-CHARACTER SIZE CONTROLER
H- DISPLAY POSITION CONTROLER
V-CHARACTER SIZE CONTROLER
V-DISPLAY POSITION CONTROLER
BLINKING CONTROLER
DISPLAY MEMORY
DISPLAY CHARACTER SELECTER
CHARACTER GEN
CLOCK GEN.
TIMING GEN
SHIFT REGISTER
DISPLAY CONTROLER
OSC IN
OSC OUT
HSYNC
VSYNC
VO
V BLK

MC-8088B [NEC]
Sampling



Verf 7
Vin 9
GND3 8
CLKI 4
CLAMP
SAMPLING
PULSE GEN.
2 Vout1
6 Vout2
3 GND1
5 GND2
1 Vcc

MC74HC165F [MOTROLA]
(8-bit Shift Register)



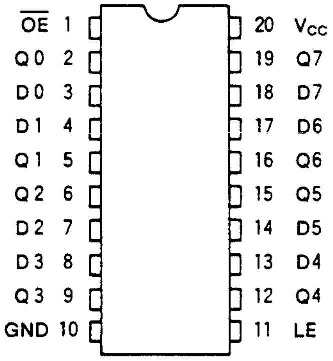
S/L 1
CLOCK 2
E 3
F 4
G 5
H 6
QH 7
GND 8
16 Vcc
15 CLOCK INH
14 D
13 C
12 B
11 A
10 SI
9 QH
S/L
CK
CK INH
E
F
G
H
QH
D
C
B
A
SI
QH

(TOP VIEW)

INPUTS					INTERNAL OUTPUTS		OUTPUT
SHIFT/ LOAD	CLOCK INH	CLOCK	SERIAL IN	PARALLEL A·······H	QA	QB	QH
L	X	X	X	a·······h	a	b	h
H	L	↑	H	X	H	QAn	QGn
H	L	↑	L	X	L	QAn	QGn
H	↑	L	H	X	H	QAn	QGn
H	↑	L	L	X	L	QAn	QGn
H	X	H	X	X	No change		
H	H	X	X	X	No change		

X : DON'T CARE

MC74HC373F [MOTROLA]
(D-Type Latch With 3-State Output)

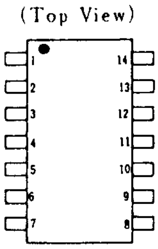


OE 1
Q0 2
D0 3
D1 4
Q1 5
Q2 6
D2 7
D3 8
Q3 9
GND 10
20 Vcc
19 Q7
18 D7
17 D6
16 Q6
15 Q5
14 D5
13 D4
12 Q4
11 LE

INPUTS			OUTPUTS
$\overline{OE}$	LE	D	
H	X	X	Z
L	L	X	Q_n
L	H	L	L
L	H	H	H

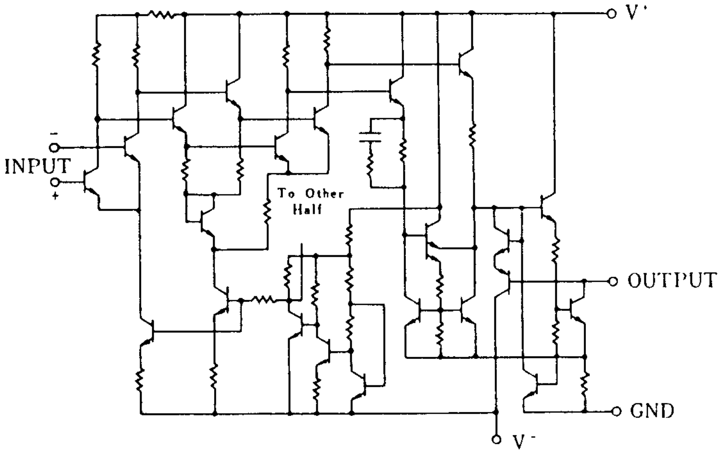
X : Don't Care
Z : Hi impedance
Qn : Q output level before the LE become "L".

NJM319M [JRC]
(Voltage Comparator)



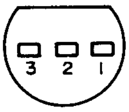
(Top View)
1
2
3
4
5
6
7
8
9
10
11
12
13
14

1	NC
2	NC
3 (2)	GND 1
4 (3)	+INPUT
5 (4)	–INPUT
6 (5)	V⁻
7 (6)	OUTPUT 2
8 (7)	GND 2
9 (8)	+INPUT 2
10(9)	–INPUT 2
11(10)	V⁺
12(1)	OUTPUT 1
13	NC
14	NC



V⁺
–
INPUT
+
To Other Half
OUTPUT
GND
V⁻

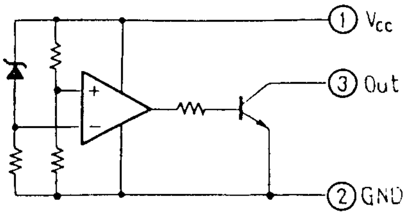
NJM79L05A [JRC]
(Three Terminal Negative Fixed Voltage Regulator)



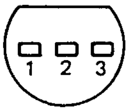
(Bottom View)

1. INPUT
2. OUTPUT (–5 V)
3. GND

PST529C-2 [MITSUMI]
(System Reset)

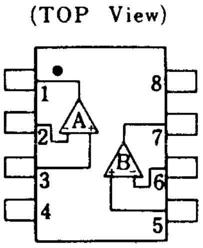


① Vcc
③ Out
② GND
+
–



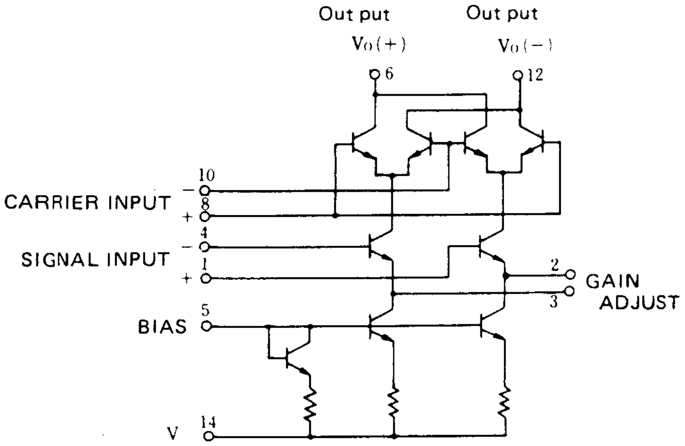
(Bottom View)

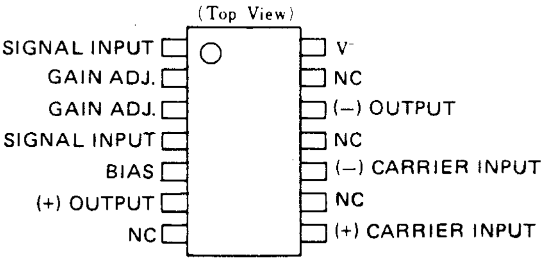
RC062M [RAYTHEON]
(J-FET Input Dual OP. Amps)


(TOP View)
1
2
3
4
5
6
7
8
A
B

1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

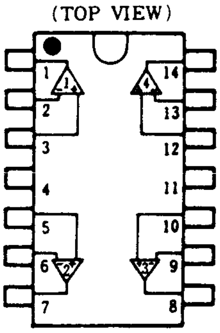
RC1496M (Double Balance Modulator/Demodulator)


Out put
Vo(+)
Out put
Vo(−)
6
12
10
CARRIER INPUT
−
8
+
4
SIGNAL INPUT
−
1
+
2
GAIN
ADJUST
3
5
BIAS
14
V


(Top View)
SIGNAL INPUT
GAIN ADJ.
GAIN ADJ.
SIGNAL INPUT
BIAS
(+) OUTPUT
NC
V⁻
NC
(−) OUTPUT
NC
(−) CARRIER INPUT
NC
(+) CARRIER INPUT

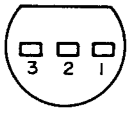
RC2068 (RAYTHEON)
RC4558 (RAYTHEON)
RC4560MD (RAYTHEON)
RC4556D (RAYTHEON)
See LM2904.

RC2902M [RAYTHEON]
(Quad OP. Amplifire)


(TOP VIEW)
1
2
3
4
5
6
7
8
9
10
11
12
13
14

Pin
1. OUTPUT 1
2. −INPUT 1
3. +INPUT 1
4. V⁺
5. +INPUT 2
6. −INPUT 2
7. OUTPUT 2
8. OUTPUT 3
9. −INPUT 3
10. +INPUT 3
11. GROUND
12. +INPUT 4
13. −INPUT 4
14. OUTPUT 4

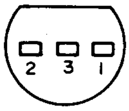
NJM78L15UA [JRC]
RC79L05UA [RAYTHEON]
(Three Terminal Negative Fixed Voltage Regulator)



(Bottom View)

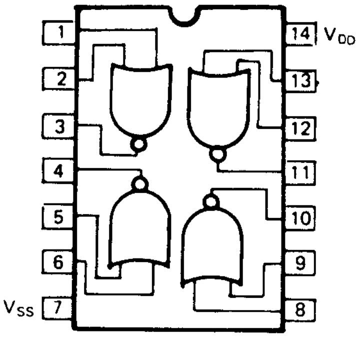
1. INPUT
2. OUTPUT (−5 V)
3. GND

TA78L005AP [TOSHIBA]
TA78L008AP [TOSHIBA]
(Three Terminal Positive Fixed Voltage Regulator)

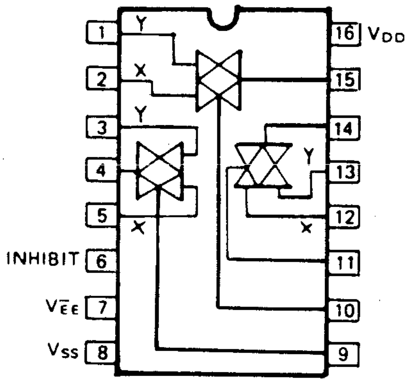


1. INPUT
2. OUTPUT
3. GND

TC4001BP/BF [TOSHIBA]
(Nor Gate)

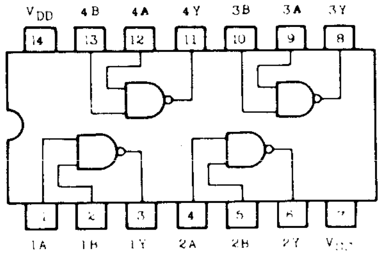

1
2
3
4
5
6
Vss 7
8
9
10
11
12
13
14 V$_{DD}$

TC4053BP/BF [TOSHIBA]
(Multiplexer/Demultiplexer)

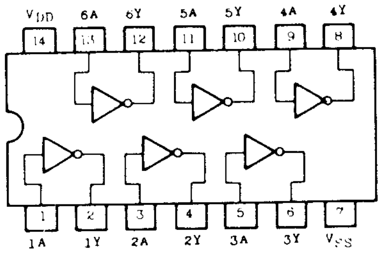

1
2
3
4
5
INHIBIT 6
VEE 7
Vss 8
16 VDD
15
14
13
12
11
10
9
Y
X
Y
X
Y
X

CONTROL H : Y OUTPUT

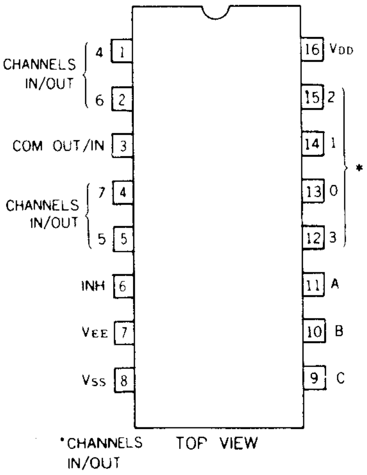
TC40H000F [TOSHIBA]
(Quad 2-Input Nand Gate)


VDD
4B
4A
4Y
3B
3A
3Y
14
13
12
11
10
9
8
1
2
3
4
5
6
7
1A
1B
1Y
2A
2B
2Y
VSS

TC40H004F/MC74HC04F [TOSHIBA]
(Hex Inverter)


VDD
6A
6Y
5A
5Y
4A
4Y
14
13
12
11
10
9
8
1
2
3
4
5
6
7
1A
1Y
2A
2Y
3A
3Y
VSS

TC4051BF (MULTIPLEXER/DEMULTIPLEXER) [TOSHIBA]

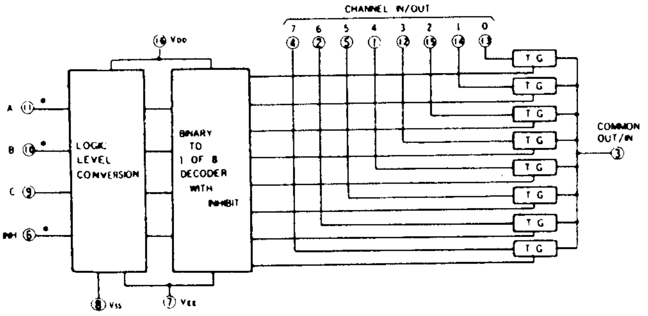

CHANNELS IN/OUT
4 1
6 2
COM OUT/IN 3
CHANNELS IN/OUT
7 4
5 5
INH 6
VEE 7
Vss 8
16 VDD
15 2
14 1
13 0
12 3
11 A
10 B
9 C
*
*CHANNELS IN/OUT
TOP VIEW

TRUTH TABLE

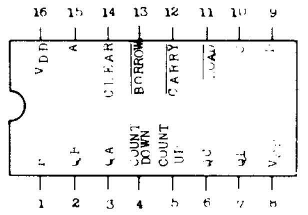
INPUT STATES				"ON" CHANNEL(S)
INHIBIT	C	B	A	
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	NONE

X = Don't care

Block Diagram


CHANNEL IN/OUT
7
6
5
4
3
2
1
0
④
②
⑤
①
⑫
⑮
⑭
⑬
⑯ VDD
A ⑪
B ⑩
C ⑨
INH ⑥
LOGIC LEVEL CONVERSION
BINARY TO 1 OF 8 DECODER WITH INHIBIT
T G
COMMON OUT/IN
③
⑧ Vss
⑦ VEE

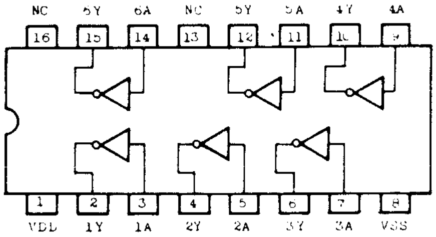
TC40H193F [TOSHIBA]
(Synchronous 4-Bit Binary Up/Down Counter Dual Clock With Clear)


16
15
14
13
12
11
10
9
VDD
A
CLEAR
BORROW
CARRY
LOAD
COUNT DOWN
COUNT UP
1
2
3
4
5
6
7
8

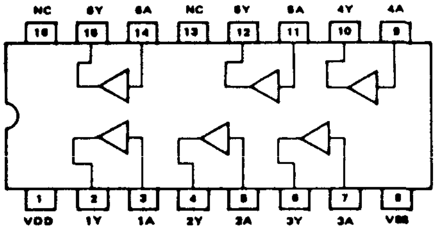
COUNT UP	COUNT DOWN	LOAD	CLEAR	ACTION
↑	H	H	L	COUNT UP
↓	H	H	L	NO COUNT
H	↑	H	L	COUNT DOWN
H	↓	H	L	NO COUNT
*	*	L	L	PRESET
*	*	*	H	RESET

* Don't care

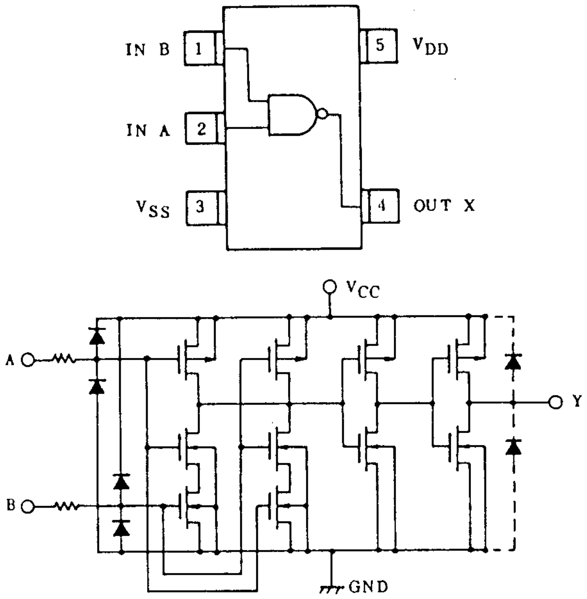
TC50H000F [TOSHIBA]
(Hex Buffer/Converter Inverting Type)


NC
6Y
6A
NC
5Y
5A
4Y
4A
16
15
14
13
12
11
10
9
1
2
3
4
5
6
7
8
VDD
1Y
1A
2Y
2A
3Y
3A
VSS

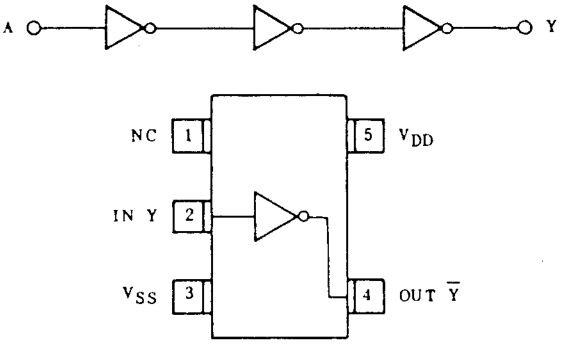
TC50H001F [TOSHIBA]
(Hex Buffer/Converter Non-Inverting Type)


NC
6Y
6A
NC
5Y
5A
4Y
4A
16
15
14
13
12
11
10
9
1
2
3
4
5
6
7
8
VDD
1Y
1A
2Y
2A
3Y
3A
VSS

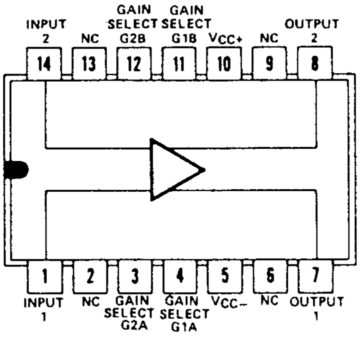
TC7S00F [TOSHIBA]
(2-input NAND Gate)


IN B
1
IN A
2
VSS
3
5
VDD
4
OUT X
VCC
A
B
Y
GND

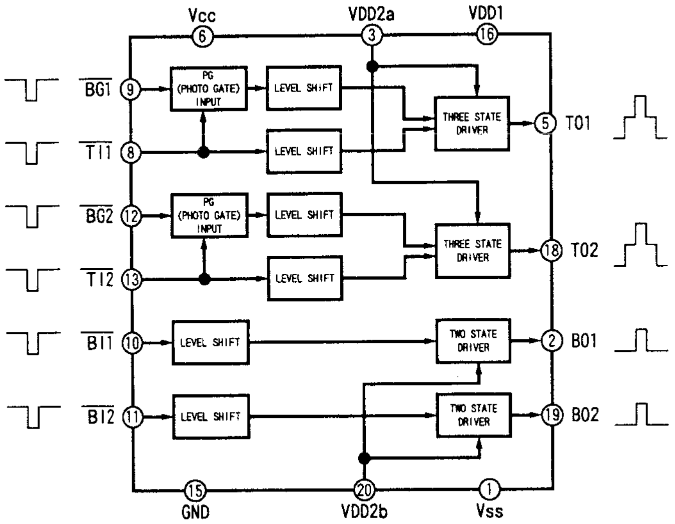
TC7S04F [TOSHIBA]
(Inverter)

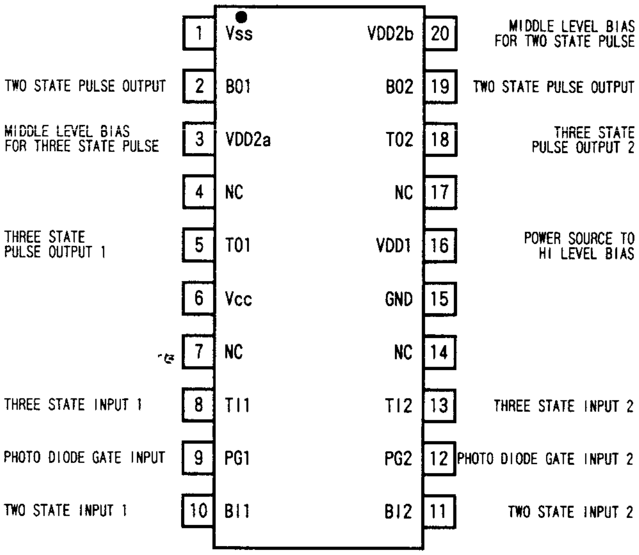

A
Y
NC
1
IN Y
2
VSS
3
5
VDD
4
OUT Y̅

UA733CNS [TEXAS]
(Differential Video Amplifier)

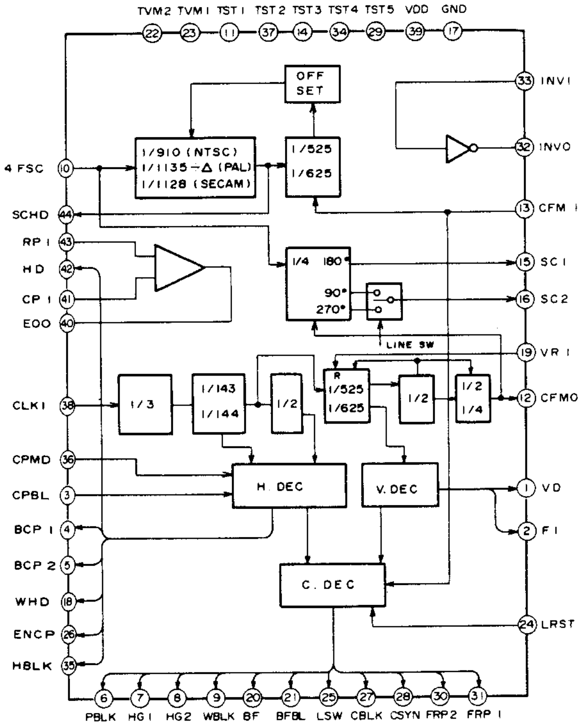

INPUT 2
NC
GAIN SELECT G2B
GAIN SELECT G1B
VCC+
NC
OUTPUT 2
14
13
12
11
10
9
8
1
2
3
4
5
6
7
INPUT 1
NC
GAIN SELECT G2A
GAIN SELECT G1A
VCC−
NC
OUTPUT 1

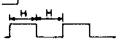
UPD16502GS [NEC]
(CCD Imagesonsor Driver)


Vcc
VDD2a
VDD1
6
3
16
BG1
9
PG (PHOTO GATE) INPUT
LEVEL SHIFT
THREE STATE DRIVER
5
T01
TI1
8
LEVEL SHIFT
BG2
12
PG (PHOTO GATE) INPUT
LEVEL SHIFT
THREE STATE DRIVER
18
T02
TI2
13
LEVEL SHIFT
BI1
10
LEVEL SHIFT
TWO STATE DRIVER
2
B01
BI2
11
LEVEL SHIFT
TWO STATE DRIVER
19
B02
15
20
1
GND
VDD2b
Vss

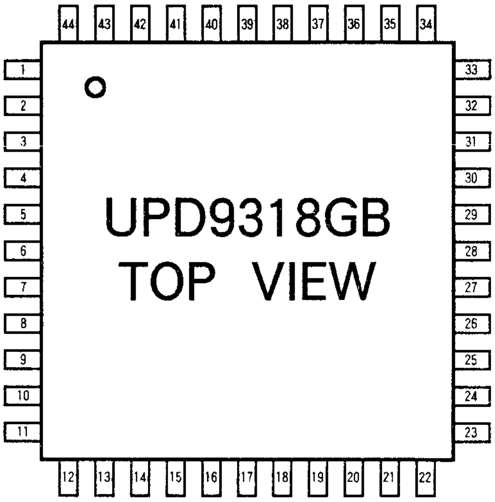

1 Vss
VDD2b 20
MIDDLE LEVEL BIAS FOR TWO STATE PULSE
TWO STATE PULSE OUTPUT
2 B01
B02 19
TWO STATE PULSE OUTPUT
MIDDLE LEVEL BIAS FOR THREE STATE PULSE
3 VDD2a
T02 18
THREE STATE PULSE OUTPUT 2
4 NC
NC 17
THREE STATE PULSE OUTPUT 1
5 T01
VDD1 16
POWER SOURCE TO HI LEVEL BIAS
6 Vcc
GND 15
7 NC
NC 14
THREE STATE INPUT 1
8 TI1
TI2 13
THREE STATE INPUT 2
PHOTO DIODE GATE INPUT
9 PG1
PG2 12
PHOTO DIODE GATE INPUT 2
TWO STATE INPUT 1
10 BI1
BI2 11
TWO STATE INPUT 2

UPD9316G [NEC]
(Sync Signal Generator)

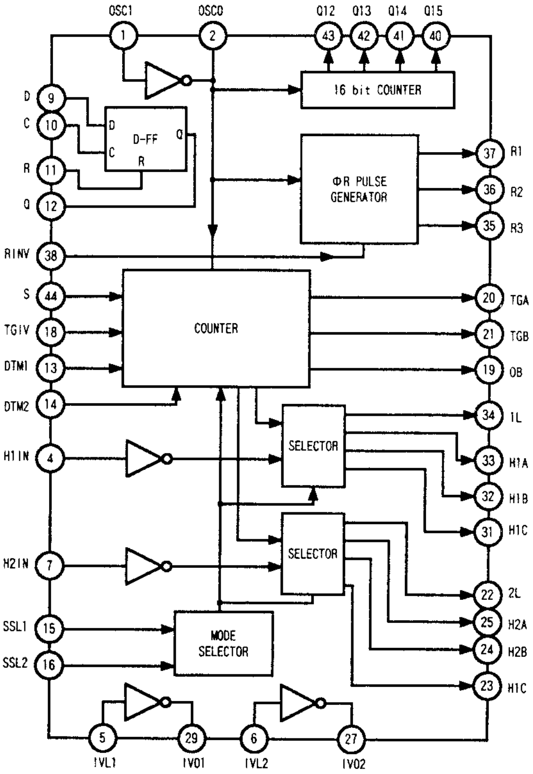

TVM2
TVM1
TST1
TST2
TST3
TST4
TST5
VDD
GND
22
23
11
37
14
34
29
39
17
OFF SET
INVI
33
INVO
32
4 FSC
10
1/910 (NTSC)
1/1135-Δ (PAL)
1/1128 (SECAM)
1/525
1/625
SCHD
44
CFM I
13
RP I
43
HD
42
CP I
41
EOO
40
1/4
180°
90°
270°
SC I
15
SC2
16
LINE SW
VR I
19
R
1/525
1/625
1/2
1/2
1/4
CFMO
12
CLKI
38
1/3
1/143
1/144
1/2
CPMD
36
CPBL
3
H. DEC
V. DEC
VD
1
F I
2
BCP 1
4
BCP 2
5
C. DEC
WHD
18
ENCP
26
LRST
24
HBLK
35
6
7
8
9
20
21
25
27
28
30
31
PBLK
HG1
HG2
WBLK
BF
BFBL
LSW
CBLK
CSYN
FRP2
FRP 1

Pin		Function
1	VD	V-Drive Pulse output
2	FI	Field Index Pulse output. (Odd : L EVEN : H)
3	CPBL	Clamp Pulse Blanking input (CPBL : H → BCP1, BCP2 : L)
4	BCP1	Optical Black Clamp Pulse output
5	BCP2	" (BCP1 + 0.8 μsec)
6	PBLK	Composite Blanking Output
7	HG1	H-Gate Pulse output (NTSC : Reset at 14H, PAL : 9H)
8	HG2	H-Gate Pulse output (NTSC : Reset at 277H, PAL : 322H)
9	WBLK	Wide Blanking Pulse Output
10	4FSC	4fsc input (NTSC : 14.31818, PAL : 17.734475)
11	TST1	Test Terminal
12	CFMO	Color Flaming Pulse Output
13	CFMI	" Input
14	TST3	Test Terminal
15	SC1	Sub Carrier output
16	SC2	' " (NTSC : SC1 −90° PAL [LSW = L] : SC1 −90° PAL [LSW = H] : SC1 +90°)
17	GND	GND
18	WHD	Wide H-Drive Pulse output
19	VRI	V-Reset Pulse Input
20	BF	Burst Flag Pulse output
21	BFBL	Burst Flag Blanking
22	TVM2	L L H H
23	TVM1	L H L H
		NTSC X PAL SECAM
24	LRST	Reset Input for Line switch 
25	LSW	Line Switch Pulse output
26	ENCP	Encorder Clamp Pulse output
27	CBLK	Composite Blanking output
28	CSYN	Composite Sync Signal output
29	TST5	Test Terminal
30	FRP2	Frame Read Pulse (For VTR Servo Lock)
31	FRP1	"
32	INVO	Inverter output
33	INVI	Inverter Input
34	TST4	Test Terminal
35	HBLK	H-transter Pulse Blanking
36	CPMD	
37	TST2	Test Terminal
38	CLKI	Master Clock Input
39	VDD	+5 V Input
40	EOO	Phase Comparater output (PRI Compare CPI PRI Advance : ↗ CPI Advance : ↘ Equal : 0)
41	CPI	Clock input
42	HD	H-Drive Pulse output
43	PRI	Reference Clock input
44	SCHD	H-Drive Pulse output (SCHD = $\frac{4}{910}$ FSC)

UPD9318G [NEC]
(Clock Pulse Generator for CCD)


UPD9318GB
TOP VIEW
44
43
42
41
40
39
38
37
36
35
34
1
2
3
4
5
6
7
8
9
10
11
33
32
31
30
29
28
27
26
25
24
23
12
13
14
15
16
17
18
19
20
21
22

Pin No.	Symbol	I/O	Description
1	OSC1	0	Main clock output (bufferd)
2	OSC ⌀	I	main clock input
3	GND	-	GND
4	H1IN	I	Horizontal drive pulse 1
5	IVI1	I	Invertor input 1
6	IVI2	I	Invertor input 2
7	H2IN	I	Horizontal drive pulse 2
8	VDD	-	VDD
9	D	I	Data (D-FF input)
10	C	I	Clock (D-FF input)
11	R	I	Reset (D-FF input)
12	Q	0	D-FF output
13	DIM1	I	⌀TG pulse width control 1
14	DIM2	I	⌀TG pulse width control 2
15	SSL1	I	Mode select 1
16	SSL2	I	Mode select 2
17	GND	-	GND
18	TGIV	I	⌀TG porality select
19	OB	0	Optical black
20	TGA	0	⌀TG output
21	TGB	0	⌀TG output
22	2L	0	Pulse output 2L
23	H2C	0	Pulse output 2C
24	H2B	0	Pulse output 2B
25	H2A	0	Pulse output 2A
26	GND	-	GND
27	IVO2	0	Invertor output 2
28	VDD	-	VDD
29	IVO1	0	Invertor output 1
30	GND	-	GND
31	H1C	0	Pulse output 1C
32	H1B	0	Pulse output 1B
33	H2A	0	Pulse output 2A
34	1L	0	Pulse output 1L
35	R3	0	Reset pulse output 3
36	R2	0	Reset pulse output 2
37	R1	0	Reset pulse output 1
38	RINV	I	Reset pulse porality select
39	VDD	-	VDD
40	Q15	0	⌀M countdown output
41	Q14	0	⌀M countdown output
42	Q13	0	⌀M countdown output
43	Q12	0	⌀M countdown output
44	S	I	Timing pulse input


OSC1
OSC0
Q12
Q13
Q14
Q15
1
2
43
42
41
40
16 bit COUNTER
D
C
R
Q
9
10
11
12
D-FF
D
C
R
Q
ΦR PULSE GENERATOR
37 R1
36 R2
35 R3
RINV 38
S 44
TGIV 18
DTM1 13
DTM2 14
COUNTER
20 TGA
21 TGB
19 OB
H1IN 4
SELECTOR
34 1L
33 H1A
32 H1B
31 H1C
H2IN 7
SELECTOR
22 2L
25 H2A
24 H2B
23 H1C
SSL1 15
SSL2 16
MODE SELECTOR
5
29
6
27
IVL1
IVO1
IVL2
IVO2

SECTION 7
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers. For maximum reliability and performance, all other replacement parts should be identical to those specified.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

RESISTORS – All resistance values are in ohms (Ω).

K	1 000
M	1 000 000
CR	Carbon Resistor
VR	Variable Resistor (Potentiometer)
MFR	Metal Film Resistor
Chip R	Chip Resistor

CAPACITORS – All capacitance values are in μF, unless otherwise indicated.

P	μμF
C Cap	Ceramic Capacitor
E Cap	Electrolytic Capacitor
FM Cap	Film Mica Capacitor
MY Cap	Mylar Capacitor
NP Cap	Non-polar Capacitor
T Cap	Tantalum Capacitor
TR Cap	Trimmer Capacitor
MP Cap	Metalized Paper Capacitor

7.1 ISMB BOARD ASSEMBLY 01

01□□□□□□

Symbol No.	Part No.	Part Name	Description
IC2	MC-8088B	IC	MOTROLA
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SB710(Q.R)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-101	MGR	100 1/10W
R2	NRSA02J-101	MGR	100 1/10W
R3	NRSA02J-0R0	MGR	0 1/10W
R6	NRSA02J-220	MGR	22 1/10W
R7	NRSA02J-101	MGR	100 1/10W
R8	NRSA02J-332	MGR	3.3K 1/10W
R12	NRSA02J-272	MGR	2.7K 1/10W
R13	NRSA02J-0R0	MGR	0 1/10W
R14	NRSA02J-0R0	MGR	0 1/10W
R15	NRSA02J-102	MGR	1K 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V
C2	NEF11EM-475	T CAP	4.7 25V
C3	NCF21EZ-104	C CAP	0.10 25V
C4	NCF21EZ-104	C CAP	0.10 25V
C5	NCF21EZ-104	C CAP	0.10 25V
C7	NCF21EZ-104	C CAP	0.10 25V
C8	NCF21EZ-104	C CAP	0.10 25V
C9	NEF11VM-105	T CAP	1.0 35V
C10	NCF21EZ-104	C CAP	0.10 25V
C11	NEF11VM-105	T CAP	1.0 35V
C12	NCF21EZ-104	C CAP	0.10 25V
C14	NEF11VM-105	T CAP	1.0 35V
C15	NEF11AM-156	T CAP	15 10V
C16	NCF21EZ-104	C CAP	0.10 25V
L1	SSV1330-150	COIL	15μ
CN6	SSV1321-017	CONNECTOR	17PIN
CN13	SCV1770-003	CONNECTOR	3PIN

7.2 ISMG BOARD ASSEMBLY 02

02□□□□□□

Symbol No.	Part No.	Part Name	Description
IC2	MC-8088B	IC	MOTROLA
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	3SK157	F.E.T.	NEC
Q3	2SB710(Q.R)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-101	MGR	100 1/10W
R2	NRSA02J-101	MGR	100 1/10W
R3	NRSA02J-0R0	MGR	0 1/10W
R6	NRSA02J-220	MGR	22 1/10W
R7	NRSA02J-101	MGR	100 1/10W
R8	NRSA02J-332	MGR	3.3K 1/10W
R12	NRSA02J-101	MGR	100 1/10W
R13	NRSA02J-272	MGR	2.7K 1/10W
R15	NRSA02J-0R0	MGR	0 1/10W
R16	NRSA02J-0R0	MGR	0 1/10W
R17	NRSA02J-102	MGR	1K 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V
C2	NEF11EM-475	T CAP	4.7 25V
C3	NCF21EZ-104	C CAP	0.10 25V
C4	NCF21EZ-104	C CAP	0.10 25V
C5	NCF21EZ-104	C CAP	0.10 25V
C7	NCF21EZ-104	C CAP	0.10 25V
C8	NCF21EZ-104	C CAP	0.10 25V
C9	NEF11VM-105	T CAP	1.0 35V
C10	NCF21EZ-104	C CAP	0.10 25V
C11	NEF11VM-105	T CAP	1.0 35V
C12	NCF21EZ-104	C CAP	0.10 25V
C14	NEF11VM-105	T CAP	1.0 35V
C15	NEF11AM-156	T CAP	15 10V
C16	NCF21EZ-104	C CAP	0.10 25V
C17	NCT03CH-560	C CAP	56P 50V
L1	SSV1330-150	COIL	15μ
CN7	SSV1321-017	CONNECTOR	17PIN
CN14	SCV1770-003	CONNECTOR	3PIN

7.3 ISMR BOARD ASSEMBLY 03

03□□□□□□

Symbol No.	Part No.	Part Name	Description
IC2	MC-8088B	IC	MOTROLA
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SB710(Q.R)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-101	MGR	100 1/10W
R2	NRSA02J-101	MGR	100 1/10W
R3	NRSA02J-0R0	MGR	0 1/10W
R6	NRSA02J-220	MGR	22 1/10W
R7	NRSA02J-101	MGR	100 1/10W
R8	NRSA02J-332	MGR	3.3K 1/10W
R12	NRSA02J-272	MGR	2.7K 1/10W
R13	NRSA02J-0R0	MGR	0 1/10W
R14	NRSA02J-0R0	MGR	0 1/10W
R15	NRSA02J-102	MGR	1K 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V
C2	NEF11EM-475	T CAP	4.7 25V
C3	NCF21EZ-104	C CAP	0.10 25V
C4	NCF21EZ-104	C CAP	0.10 25V
C5	NCF21EZ-104	C CAP	0.10 25V
C6	NCB21HK-102	C CAP	1000P 50V
C7	NCF21EZ-104	C CAP	0.10 25V
C8	NCF21EZ-104	C CAP	0.10 25V
C9	NEF11VM-105	T CAP	1.0 35V
C10	NCF21EZ-104	C CAP	0.10 25V
C11	NEF11VM-105	T CAP	1.0 35V
C12	NCF21EZ-104	C CAP	0.10 25V
C14	NEF11VM-105	T CAP	1.0 35V
C15	NEF11AM-156	T CAP	15 10V
C16	NCF21EZ-104	C CAP	0.10 25V
L1	SSV1330-150	COIL	15μ
CN8	SSV1321-017	CONNECTOR	17PIN
CN15	SCV1770-003	CONNECTOR	3PIN

7.4 PA BOARD ASSEMBLY 04

04□□□□□□

Symbol No.	Part No.	Part Name	Description
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SC2406(S.T)	TRANSISTOR	MATSUSHITA
Q4	2SK198(Q.R)	FET	MATSUSHITA
Q5	2SC2406(S.T)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SB710(Q.R)	TRANSISTOR	MATSUSHITA
Q9	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q10	2SC2406(S.T)	TRANSISTOR	MATSUSHITA
Q11	2SK198(Q.R)	FET	MATSUSHITA
Q12	2SC2406(S.T)	TRANSISTOR	MATSUSHITA
Q13	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q14	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q15	2SB710(Q.R)	TRANSISTOR	MATSUSHITA
Q17	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q18	2SC2406(S.T)	TRANSISTOR	MATSUSHITA
Q19	2SK198(Q.R)	FET	MATSUSHITA
Q20	2SC2406(S.T)	TRANSISTOR	MATSUSHITA
Q21	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q22	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q23	2SB710(Q.R)	TRANSISTOR	MATSUSHITA
Q24	2SA1179(M6)	TRANSISTOR	SANYO
R1	NRSA02J-101	MGR	100 1/10W
R3	NRSA02J-472	MGR	4.7K 1/10W
R4	NRSA02J-102	MGR	1.0K 1/10W
R5	NRSA02J-222	MGR	2.2K 1/10W
R6	NRSA02J-333	MGR	33K 1/10W
R7	NRSA02J-333	MGR	33K 1/10W
R8	NRSA02J-222	MGR	2.2K 1/10W
R9	NRSA02J-122	MGR	1.2K 1/10W
R10	NRSA02J-222	MGR	2.2K 1/10W
R11	NRSA02J-472	MGR	4.7K 1/10W
R12	NRSA02J-272	MGR	2.7K 1/10W
R13	NRSA02J-102	MGR	1.0K 1/10W
R14	NRSA02J-102	MGR	1.0K 1/10W
R15	NRSA02J-152	MGR	1.5K 1/10W
R16	NRSA02J-101	MGR	100 1/10W
R17	NRSA02J-472	MGR	4.7K 1/10W
R18	NRSA02J-102	MGR	1.0K 1/10W
R19	NRSA02J-222	MGR	2.2K 1/10W
R20	NRSA02J-333	MGR	33K 1/10W
R21	NRSA02J-333	MGR	33K 1/10W
R22	NRSA02J-222	MGR	2.2K 1/10W
R23	NRSA02J-392	MGR	3.9K 1/10W
R24	NRSA02J-222	MGR	2.2K 1/10W
R25	NRSA02J-472	MGR	4.7K 1/10W
R26	NRSA02J-272	MGR	2.7K 1/10W
R27	NRSA02J-102	MGR	1.0K 1/10W
R28	NRSA02J-102	MGR	1.0K 1/10W
R29	NRSA02J-152	MGR	1.5K 1/10W
R30	NRSA02J-101	MGR	100 1/10W
R32	NRSA02J-472	MGR	4.7K 1/10W
R33	NRSA02J-102	MGR	1.0K 1/10W
R34	NRSA02J-222	MGR	2.2K 1/10W
R35	NRSA02J-333	MGR	33K 1/10W
R36	NRSA02J-333	MGR	33K 1/10W
R37	NRSA02J-222	MGR	2.2K 1/10W
R38	NRSA02J-332	MGR	3.3K 1/10W

7.5 DRM1 BOARD ASSEMBLY 05

05☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description	
R39	NRSA02J-222	MGR	2.2K	1/10W
R40	NRSA02J-472	MGR	4.7K	1/10W
R41	NRSA02J-272	MGR	2.7K	1/10W
R42	NRSA02J-102	MGR	1.0K	1/10W
R43	NRSA02J-102	MGR	1.0K	1/10W
R44	NRSA02J-152	MGR	1.5K	1/10W
R45	NRSA02J-330	MGR	33	1/10W
R46	NRSA02J-471	MGR	470	1/10W
R47	NRSA02J-103	MGR	10K	1/10W
C1	NCF21EZ-104	C CAP	0.10	25V
C2	NCF21EZ-104	C CAP	0.10	25V
C3	NEN11AM-106	NP CAP	10	10V
C4	NCF21EZ-104	C CAP	0.10	25V
C5	NCT03CH-220	C CAP	22P	50V
C6	NEF11AM-156	T CAP	15	10V
C8	NEA11AM-686	E CAP	68	10V
C9	NCF21EZ-104	C CAP	0.10	25V
C10	NCF21EZ-104	C CAP	0.10	25V
C11	NCF21EZ-104	C CAP	0.10	25V
C12	NEN11AM-106	NP CAP	10	10V
C13	NCF21EZ-104	C CAP	0.10	25V
C14	NCT03CH-100	C CAP	10P	50V
C15	NEF11AM-156	T CAP	15	10V
C17	NEA11AM-686	E CAP	68	10V
C18	NCF21EZ-104	C CAP	0.10	25V
C19	NCF21EZ-104	C CAP	0.10	25V
C20	NCF21EZ-104	C CAP	0.10	25V
C21	NEN11AM-106	NP CAP	10	10V
C22	NCF21EZ-104	C CAP	0.10	25V
C23	NCT03CH-150	C CAP	15P	50V
C24	NEF11AM-156	T CAP	15	10V
C26	NEA11AM-686	E CAP	68	10V
C27	NCF21EZ-104	C CAP	0.10	25V
C28	NEA10JM-107	E CAP	100	6.3V
C29	NCF21EZ-104	C CAP	0.10	25V
C30	NCF21EZ-104	C CAP	0.10	25V
C31	NCT03CH-221	C CAP	220P	50V
C32	NEA11AM-227	E CAP	220	10V
C36	NEA11AM-227	E CAP	220	10V
C37	NCT03CH-151	C CAP	150P	50V
L4	NRSA02J-0R0	MGR	0	1/10W
L5	NRSA02J-0R0	MGR	0	1/10W
L6	NRSA02J-0R0	MGR	0	1/10W
DL1	SCV1253-001	DELAY LINE		
DL2	SCV1253-001	DELAY LINE		
DL3	SCV1253-001	DELAY LINE		
CN9	SCV1770-012	CONNECTOR		
CN13	SCV1770-003	CONNECTOR		
CN14	SCV1770-003	CONNECTOR		
CN15	SCV1770-003	CONNECTOR		
CN32	SCV1770-004	CONNECTOR		

Symbol No.	Part No.	Part Name	Description	
IC1	MN5137	I.C.(M)	MATSUSHITA	
IC2	UPD9316GB	I.C.(M)	NEC	
IC3	UPD9318GB	IC	NEC	
IC4	MC74HC04AF	I.C.(M)	MOTOROLA	
IC5	TC50H000F	IC	TOSHIBA	
IC6	RC78L15UA	I.C.(M)	RAYTHEON	
IC7	TC7SU04F	I.C.(M)	TOSHIBA	
IC8	TC7SU04F	I.C.(M)	TOSHIBA	
IC9	TC7S08F	I.C.(M)	TOSHIBA	
Q1	2SD874(QR)	TRANSISTOR		
D1	MA152A	DIODE	MATSUSHITA	
D2	FC-52M	VARI.CAP.DIODE	FUJITSU	
R3	NRSA02J-0R0	MGR	0	1/10W(U)
R4	NRSA02J-0R0	MGR	0	1/10W(E)
R5	NRSA02J-102	MGR	1.0K	1/10W
R6	NRSA02J-0R0	MGR	0	1/10W(E)
R7	NRSA02J-0R0	MGR	0	1/10W(U)
R8	NRSA02J-331	MGR	330	1/10W
R9	NRSA02J-105	MGR	1.0M	1/10W
R10	NRSA02J-391	MGR	390	1/10W
R11	NRSA02J-104	MGR	100K	1/10W
R12	NRSA02J-682	MGR	6.8K	1/10W(U)
	NRSA02J-102	MGR	1.0K	1/10W(E)
R13	NRSA02J-102	MGR	1.0K	1/10W
R14	NRSA02J-102	MGR	1.0K	1/10W
R15	NRSA02J-103	MGR	10K	1/10W
R16	NRSA02J-103	MGR	10K	1/10W
R17	NRSA02J-102	MGR	1.0K	1/10W
R18	NRSA02J-822	MGR	8.2K	1/10W
R19	NRSA02J-153	MGR	15K	1/10W
R20	NRSA02J-331	MGR	330	1/10W
R21	NRSA02J-0R0	MGR	0	1/10W
R22	NRSA02J-0R0	MGR	0	1/10W
R23	NRSA02J-0R0	MGR	0	1/10W
R24	NRSA02J-0R0	MGR	0	1/10W
R25	NRSA02J-0R0	MGR	0	1/10W
R27	NRSA02J-151	MGR	150	1/10W
R28	NRSA02J-0R0	MGR	0	1/10W
VR1	NVP1500-501	V.RESISTOR		
VR2	NVP1500-102	TRIM.RESISTOR		
C1	NEA11AM-336	E CAP	33	10V
C2	NEA11AM-336	E CAP	33	10V
C3	NCT03CH-150	C CAP	15P	50V
C4	NCF21EZ-104	C CAP	0.10	25V
C5	NCF21EZ-104	C CAP	0.10	25V
C6	NCT03CH-150	C CAP	15P	50V
C7	NEA11AM-336	E CAP	33	10V
C8	NCF21EZ-104	C CAP	0.10	25V
C9	NCT03CH-221	C CAP	220P	50V
C10	NCF21EZ-104	C CAP	0.10	25V
C11	NCT03CH-100	C CAP	10P	50V
C12	NCT03CH-680	C CAP	68P	50V
C13	NCF21EZ-104	C CAP	0.10	25V

7.6 DRM2 BOARD ASSEMBLY 06

06□□□□□□

Symbol No.	Part No.	Part Name	Description
C14	NCF21EZ-104	C CAP	0.10 25V
C15	NEF11AM-156	T CAP	15 10V
C16	NCT03CH-820	C CAP	82P 50V
C17	NCT03CH-8R0	C CAP	8.0P 50V
C18	NCT03CH-221	C CAP	220P 50V
C19	NEF11AM-106	T CAP	10 10V
C20	NEF11AM-225	T CAP	2.2 10V
C21	NEA11EM-106	AL E.CAPACITOR	10 25V
C22	NCT03CH-101	C CAP	100P 50V
C23	NCT03CH-101	C CAP	100P 50V
C25	NEA11AM-336	E CAP	33 10V
C26	NCF21EZ-104	C CAP	0.10 25V
C27	NEA11AM-336	E CAP	33 10V
C28	QETA0JM-228	E CAP	2200 6.3V
C29	NEA11AM-336	E CAP	33 10V
L1	SSV1330-150	COIL	
L2	SSV1330-150	COIL	
L3	SSV1330-150	COIL	
DL1	SCV2006-100	DELAY LINE	
X1	SCV2005-001	CRYSTAL	
CN21	SCV1770-014	CONNECTOR	
CN32	SCV1770-006	CONNECTOR	
CN34	SCV1814-026X	CONNECTOR	

Symbol No.	Part No.	Part Name	Description
IC1	UPD16502GS	I.C.(M)	NEC
IC2	UPD16502GS	I.C.(M)	NEC
IC3	UPD16502GS	I.C.(M)	NEC
IC4	UPD16502GS	I.C.(M)	NEC
IC5	UPD16502GS	I.C.(M)	NEC
IC6	UPD16502GS	I.C.(M)	NEC
IC7	TC7SU04F	I.C.(M)	TOSHIBA
IC8	TC7SU04F	I.C.(M)	TOSHIBA
IC9	TC7SU04F	I.C.(M)	TOSHIBA
Q1	2SD874(QR)	TRANSISTOR	
Q2	2SD874(QR)	TRANSISTOR	
Q3	2SB766(QR)	TRANSISTOR	
Q4	2SD874(QR)	TRANSISTOR	
Q5	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q6	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q7	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-103	MGR	10K 1/10W
R2	NRSA02J-103	MGR	10K 1/10W
R3	NRSA02J-103	MGR	10K 1/10W
R4	NRSA02J-103	MGR	10K 1/10W
R5	NRSA02J-101	MGR	100 1/10W
R6	NRSA02J-272	MGR	2.7K 1/10W
R7	NRSA02J-183	MGR	18K 1/10W
R8	NRSA02J-222	MGR	2.2K 1/10W
R9	NRSA02J-223	MGR	22K 1/10W
R10	NRSA02J-222	MGR	2.2K 1/10W
R11	NRSA02J-472	MGR	4.7K 1/10W
R12	NRSA02J-222	MGR	2.2K 1/10W
R13	NRSA02J-472	MGR	4.7K 1/10W
R14	NRSA02J-222	MGR	2.2K 1/10W
R15	NRSA02J-472	MGR	4.7K 1/10W
R16	NRSA02J-330	MGR	33 1/10W
R17	NRSA02J-330	MGR	33 1/10W
R18	NRSA02J-220	MGR	22 1/10W
R19	NRSA02J-183	MGR	18K 1/10W
R20	NRSA02J-682	MGR	6.8K 1/10W
R21	NRSA02J-820	MGR	82 1/10W
R22	NRSA02J-183	MGR	18K 1/10W
R23	NRSA02J-682	MGR	6.8K 1/10W
R24	NRSA02J-820	MGR	82 1/10W
R25	NRSA02J-183	MGR	18K 1/10W
R26	NRSA02J-682	MGR	6.8K 1/10W
R27	NRSA02J-820	MGR	82 1/10W
VR1	NVP1501-103	VR	B-VSUB
VR2	NVP1501-103	VR	G-VSUB
VR3	NVP1501-103	VR	R-VSUB
VR4	NVP1501-502	VR	B CLOCK
VR5	NVP1501-502	VR	G CLOCK
VR6	NVP1501-502	VR	R CLOCK
C1	NEA11AM-336	E CAP	33 10V
C2	NEA11AM-336	E CAP	33 10V
C3	NEA11AM-336	E CAP	33 10V
C4	NCF21EZ-104	C CAP	0.10 25V
C5	NEA10GM-476	E CAP	47 4V
C6	NEA10GM-227	E CAP	220 4V

7.7 PP BOARD ASSEMBLY 07

07□□□□□□

Symbol No.	Part No.	Part Name	Description
C7	NEA10JM-107	E CAP	100 6.3V
C8	NEA11AM-336	E CAP	33 10V
C9	NEA11AM-336	E CAP	33 10V
C10	NEA11CM-226	E CAP	22 16V
C11	NCF21EZ-104	C CAP	0.10 25V
C12	NCF21EZ-104	C CAP	0.10 25V
C13	NEA11CM-226	E CAP	22 16V
C14	NCF21EZ-104	C CAP	0.10 25V
C15	NEA11CM-226	E CAP	22 16V
C16	NCF21EZ-104	C CAP	0.10 25V
C17	NEA11CM-226	E CAP	22 16V
C18	NEA11CM-226	E CAP	22 16V
C19	NCF21EZ-104	C CAP	0.10 25V
C20	NCF21EZ-104	C CAP	0.10 25V
C21	NCF21EZ-104	C CAP	0.10 25V
C22	NEA11AM-336	E CAP	33 10V
C23	NEA11CM-226	E CAP	22 16V
C24	NCF21EZ-104	C CAP	0.10 25V
C25	NCF21EZ-104	C CAP	0.10 25V
C26	NCF21EZ-104	C CAP	0.10 25V
C27	NCF21EZ-104	C CAP	0.10 25V
C28	NCF21EZ-104	C CAP	0.10 25V
C29	NCF21EZ-104	C CAP	0.10 25V
C30	NCB21HK-102	C CAP	1000P 50V
C31	NCB21HK-102	C CAP	1000P 50V
C32	NCB21HK-102	C CAP	1000P 50V
C33	QETA1AM-108	E CAP	1000 10V
C34	QETA1CM-108	E CAP	1000 16V
L1	SSV1330-150	COIL	
CN6	SSV1321-017	CONNECTOR	
CN7	SSV1321-017	CONNECTOR	
CN8	SSV1321-017	CONNECTOR	
CN34	SCV1815-026X	CONNECTOR	

Symbol No.	Part No.	Part Name	Description
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SK198(Q.R)	FET	MATSUSHITA
Q8	2SK198(Q.R)	FET	MATSUSHITA
Q9	2SK198(Q.R)	FET	MATSUSHITA
Q10	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q11	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q12	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q13	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q14	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q15	2SK198(Q.R)	FET	MATSUSHITA
Q16	2SA1179M5.6	TRANSISTOR	SANYO
Q17	2SC2406(S.T)	TRANSISTOR	MATSUSHITA
Q18	2SK198(Q.R)	FET	MATSUSHITA
Q19	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
D1	HZ3B2	ZENER DIODE	HITACHI (U)
R1	NRSA02J-333	MGR	33K 1/10W
R2	NRSA02J-393	MGR	39K 1/10W
R3	NRSA02J-103	MGR	10K 1/10W
R4	NRSA02J-222	MGR	2.2K 1/10W
R5	NRSA02J-222	MGR	2.2K 1/10W
R6	QVPB613-203	VR	20K B H SAW
R7	NRSA02J-104	MGR	100K 1/10W
R8	QVPB613-203	VR	20K G H SAW
R9	NRSA02J-104	MGR	100K 1/10W
R10	QVPB613-203	VR	20K R H SAW
R11	NRSA02J-104	MGR	100K 1/10W
R12	NRSA02J-223	MGR	22K 1/10W
R13	NRSA02J-154	MGR	150K 1/10W
R14	NRSA02J-222	MGR	2.2K 1/10W
R15	NRSA02J-222	MGR	2.2K 1/10W
R16	QVPB613-203	VR	20K B H PARA
R17	NRSA02J-153	MGR	15K 1/10W
R18	QVPB613-203	VR	20K G H PARA
R19	NRSA02J-153	MGR	15K 1/10W
R20	QVPB613-203	VR	20K R H PARA
R21	NRSA02J-153	MGR	15K 1/10W
R22	NRSA02J-103	MGR	10K 1/10W
R23	NRSA02J-393	MGR	39K 1/10W
R24	NRSA02J-103	MGR	10K 1/10W
R25	NRSA02J-222	MGR	2.2K 1/10W
R26	NRSA02J-222	MGR	2.2K 1/10W
R27	QVPB613-203	VR	20K B V SAW
R28	NRSA02J-104	MGR	100K 1/10W
R29	QVPB613-203	VR	20K G V SAW
R30	NRSA02J-104	MGR	100K 1/10W
R31	QVPB613-203	VR	20K R V SAW
R32	NRSA02J-104	MGR	100K 1/10W
R33	QVPB613-503	VR	50K G DY SAW
R34	NRSA02J-154	MGR	150K 1/10W
R35	QVPB613-503	VR	50K R DY SAW
R36	NRSA02J-154	MGR	150K 1/10W
R37	NRSA02J-223	MGR	22K 1/10W

Symbol No.	Part No.	Part Name	Description
R38	NRSA02J-154	MGR	150K 1/10W
R39	NRSA02J-222	MGR	2.2K 1/10W
R40	NRSA02J-222	MGR	2.2K 1/10W
R41	QVPB613-203	VR	20K B V PARA
R42	NRSA02J-223	MGR	22K 1/10W
R43	QVPB613-203	VR	20K G V PARA
R44	NRSA02J-223	MGR	22K 1/10W
R45	QVPB613-203	VR	20K R V PARA
R46	NRSA02J-223	MGR	22K 1/10W
R47	QVPB613-503	VR	50K G PARA DY
R48	NRSA02J-153	MGR	15K 1/10W
R49	QVPB613-503	VR	50K R PARA DY
R50	NRSA02J-153	MGR	15K 1/10W
R51	NRSA02J-222	MGR	2.2K 1/10W
R52	NRSA02J-222	MGR	2.2K 1/10W
R53	NRSA02J-153	MGR	15K 1/10W
R54	NRSA02J-153	MGR	15K 1/10W
R55	NRSA02J-153	MGR	15K 1/10W
R56	NRSA02J-152	MGR	1.5K 1/10W
R57	NRSA02J-152	MGR	1.5K 1/10W
R58	NRSA02J-152	MGR	1.5K 1/10W
R59	NRSA02J-104	MGR	100K 1/10W
R60	NRSA02J-104	MGR	100K 1/10W
R61	NRSA02J-473	MGR	47K 1/10W
R62	NRSA02J-273	MGR	27K 1/10W(U)
	NRSA02J-103	MGR	10K 1/10W(E)
R63	NRSA02J-473	MGR	47K 1/10W
R64	NRSA02J-273	MGR	27K 1/10W(U)
	NRSA02J-103	MGR	10K 1/10W(E)
R65	NRSA02J-473	MGR	47K 1/10W
R66	NRSA02J-273	MGR	27K 1/10W(U)
	NRSA02J-103	MGR	10K 1/10W(E)
R67	QVPB613-103	VR	10K B BLK BAL
R68	QVPB613-103	VR	10K G BLK BAL
R69	QVPB613-103	VR	10K R BLK BAL
R71	NRSA02J-472	MGR	4.7K 1/10W(U)
R73	NRSA02J-472	MGR	4.7K 1/10W(U)
R75	NRSA02J-472	MGR	4.7K 1/10W(U)
R76	NRSA02J-101	MGR	100 1/10W
R77	NRSA02J-101	MGR	100 1/10W
R78	NRSA02J-101	MGR	100 1/10W
R79	NRSA02J-103	MGR	10K 1/10W
R80	QVPB613-103	VR	10K B PST BLK
R81	NRSA02J-103	MGR	10K 1/10W
R82	QVPB613-103	VR	10K G PST BLK
R83	NRSA02J-103	MGR	10K 1/10W
R84	QVPB613-103	VR	10K R PST BLK
R85	NRSA02J-271	MGR	270 1/10W
R86	NRSA02J-331	MGR	330 1/10W
R87	NRSA02J-331	MGR	330 1/10W
R88	NRSA02J-682	MGR	6.8K 1/10W
R89	NRSA02J-682	MGR	6.8K 1/10W
R90	NRSA02J-682	MGR	6.8K 1/10W
R91	NRSA02J-333	MGR	33K 1/10W
R92	NRSA02J-824	MGR	820K 1/10W
R93	NRSA02J-683	MGR	68K 1/10W
R94	NRSA02J-102	MGR	1.0K 1/10W
R95	NRSA02J-472	MGR	4.7K 1/10W
R96	NRSA02J-182	MGR	1.8K 1/10W

Symbol No.	Part No.	Part Name	Description
R97	NRSA02J-561	MGR	560 1/10W
R98	NRSA02J-223	MGR	22K 1/10W
R99	NRSA02J-102	MGR	1.0K 1/10W
R100	NRSA02J-472	MGR	4.7K 1/10W
R101	NRSA02J-472	MGR	4.7K 1/10W
R102	NRSA02J-472	MGR	4.7K 1/10W
R103	QVPB613-104	VR	100K GDY H SAW
R104	NRSA02J-104	MGR	100K 1/10W
R105	QVPB613-104	VR	100K RDY H SAW
R106	NRSA02J-104	MGR	100K 1/10W
R107	NRSA02J-222	MGR	2.2K 1/10W(U)
C1	NCT03CH-101	C CAP	100P 50V
C2	NCB21HK-222	C CAP	2200P 50V
C3	NCB21HK-222	C CAP	2200P 50V
C4	NCF21EZ-104	C CAP	0.10 25V
C5	NCB21HK-222	C CAP	2200P 50V
C6	NCB21HK-222	C CAP	2200P 50V
C7	NCF21EZ-104	C CAP	0.10 25V
C8	QEJ41VM-105	T CAP	1.0 35V
C9	QER40JM-476	E CAP	47 6.3V
C10	QEJ41VM-105	T CAP	1.0 35V
C11	QER40JM-476	E CAP	47 6.3V
C12	QEPA0JM-476	NP CAP	47 6.3V
C13	NCT03CH-470	C CAP	47P 50V
C14	QEPA0JM-476	NP CAP	47 6.3V
C15	NCT03CH-470	C CAP	47P 50V
C16	QEPA0JM-476	NP CAP	47 6.3V
C17	NCT03CH-470	C CAP	47P 50V
C18	QER40JM-476	E CAP	47 6.3V
C19	QEJ41AM-475	T CAP	4.7 10V
C20	QEJ41AM-475	T CAP	4.7 10V
C21	QEJ41AM-475	T CAP	4.7 10V
C22	QEJ41AM-106	T CAP	10 10V
C23	QEJ41AM-106	T CAP	10 10V
C24	QEJ41AM-106	T CAP	10 10V
C25	QER41AM-476	E CAP	47 10V
C26	QER41AM-476	E CAP	47 10V
C27	QER41AM-476	E CAP	47 10V
C28	QER40JM-476	E CAP	47 6.3V
C29	QER40JM-476	E CAP	47 6.3V
C30	QER41AM-476	E CAP	47 10V
C31	NCT03CH-101	C CAP	100P 50V
C32	NCT03CH-151	C CAP	150P 50V
C33	QEJ41AM-226	T CAP	22 10V(U)
CN9	SCV1074-012	CONNECTOR	12PIN
CN11	SCV1319-15S	CONNECTOR	15PIN

Symbol No.	Part No.	Part Name	Description
	CBM1 CBMC2288-9-00A PRE BL MIX CBM		
Q1	2SK198(Q.R)	FET	MATSUSHITA
Q2	2SA1179M5.6	TRANSISTOR	SANYO
Q3	2SC2406(S.T)	TRANSISTOR	MATSUSHITA
Q4	2SK198(Q.R)	FET	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SK198(Q.R)	FET	MATSUSHITA
Q7	2SA1179M5.6	TRANSISTOR	SANYO
Q8	2SC2406(S.T)	TRANSISTOR	MATSUSHITA
Q9	2SK198(Q.R)	FET	MATSUSHITA
Q10	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-333	MGR	33K 1/10W
R2	NRSA02J-824	MGR	820K 1/10W
R3	NRSA02J-683	MGR	68K 1/10W
R4	NRSA02J-102	MGR	1.0K 1/10W
R5	NRSA02J-472	MGR	4.7K 1/10W
R6	NRSA02J-182	MGR	1.8K 1/10W
R7	NRSA02J-561	MGR	560 1/10W
R8	NRSA02J-223	MGR	22K 1/10W
R9	NRSA02J-102	MGR	1.0K 1/10W
R10	NRSA02J-333	MGR	33K 1/10W
R11	NRSA02J-824	MGR	820K 1/10W
R12	NRSA02J-683	MGR	68K 1/10W
R13	NRSA02J-102	MGR	1.0K 1/10W
R14	NRSA02J-472	MGR	4.7K 1/10W
R15	NRSA02J-182	MGR	1.8K 1/10W
R16	NRSA02J-561	MGR	560 1/10W
R17	NRSA02J-223	MGR	22K 1/10W
R18	NRSA02J-102	MGR	1.0K 1/10W
C1	NCT03CH-101	C CAP	100P 50V
C2	NCT03CH-101	C CAP	100P 50V
C3	NCT03CH-151	C CAP	150P 50V
C4	NCT03CH-151	C CAP	150P 50V
C19	NCF21EZ-104	C CAP	0.10 25V
	CBM2 CBMC2288-A-00A SH MIX CBM		
IC1	RC4558M	I.C.(M)	RAYTHEON
IC2	RC4558M	I.C.(M)	RAYTHEON
Q1	2SK198(Q.R)	FET	MATSUSHITA
Q2	2SK198(Q.R)	FET	MATSUSHITA
Q3	2SK198(Q.R)	FET	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-223	MGR	22K 1/10W
R2	NRSA02J-223	MGR	22K 1/10W
R3	NRSA02J-223	MGR	22K 1/10W
R4	NRSA02J-332	MGR	3.3K 1/10W
R5	NRSA02J-332	MGR	3.3K 1/10W
R6	NRSA02J-332	MGR	3.3K 1/10W
R7	NRSA02J-333	MGR	33K 1/10W
R8	NRSA02J-333	MGR	33K 1/10W
R9	NRSA02J-333	MGR	33K 1/10W
R10	NRSA02J-472	MGR	4.7K 1/10W
R11	NRSA02J-472	MGR	4.7K 1/10W
R12	NRSA02J-472	MGR	4.7K 1/10W
R13	NRSA02J-221	MGR	220 1/10W
R14	NRSA02J-221	MGR	220 1/10W
R15	NRSA02J-221	MGR	220 1/10W
C1	NCT03CH-220	C CAP	22P 50V
C2	NCT03CH-220	C CAP	22P 50V
C3	NCT03CH-220	C CAP	22P 50V
C4	NCT03CH-101	C CAP	100P 50V
C5	NCT03CH-101	C CAP	100P 50V
C6	NCT03CH-101	C CAP	100P 50V

7.8 PR1 BOARD ASSEMBLY 08

08□□□□□□

Symbol No.	Part No.	Part Name	Description
IC1	RC4560MDT2	I.C.(M)	RAYTHEON
IC2	RC4560MDT2	I.C.(M)	RAYTHEON
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SK198(Q.R)	FET	MATSUSHITA
Q8	2SK198(Q.R)	FET	MATSUSHITA
Q9	2SK198(Q.R)	FET	MATSUSHITA
Q10	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q11	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q12	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q13	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q14	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q15	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q16	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q17	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q18	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q19	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q20	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q21	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q22	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q23	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q24	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q25	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q26	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q27	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q28	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q29	DTC124EK	TRANSISTOR	ROHM
Q30	DTC124EK	TRANSISTOR	ROHM
Q31	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q32	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q33	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
D1	MA152A	DIODE	MATSUSHITA
D2	1S2076A	SI.DIODE	HITACHI
D3	1S2076A	SI.DIODE	HITACHI
D4	1S2076A	SI.DIODE	HITACHI
D5	1S2076A	SI.DIODE	HITACHI
D6	1S2076A	SI.DIODE	HITACHI
D7	1S2076A	SI.DIODE	HITACHI
D8	1S2076A	SI.DIODE	HITACHI
D9	1S2076A	SI.DIODE	HITACHI
D10	1S2076A	SI.DIODE	HITACHI
D11	1S2076A	SI.DIODE	HITACHI
D12	1S2076A	SI.DIODE	HITACHI
D13	1S2076A	SI.DIODE	HITACHI
R1	QVPB614-102	VR	1.0K B IN GAIN
R2	QVPB614-202	VR	2.0K G IN GAIN
R3	QVPB614-102	VR	1.0K R IN GAIN
R4	NRSA02J-152	MGR	1.5K 1/10W
R5	NRSA02J-152	MGR	1.5K 1/10W
R6	NRSA02J-152	MGR	1.5K 1/10W
R7	NRSA02J-681	MGR	680 1/10W

Symbol No.	Part No.	Part Name	Description
R8	NRSA02J-102	MGR	1.0K 1/10W
R9	NRSA02J-681	MGR	680 1/10W
R10	NRSA02J-152	MGR	1.5K 1/10W
R11	NRSA02J-152	MGR	1.5K 1/10W
R12	NRSA02J-152	MGR	1.5K 1/10W
R13	NRSA02J-222	MGR	2.2K 1/10W
R14	NRSA02J-472	MGR	4.7K 1/10W
R15	NRSA02J-222	MGR	2.2K 1/10W
R16	QVPB614-103	VR	10K B BLACK
R18	QVPB614-103	VR	10K R BLACK
R19	NRSA02J-153	MGR	15K 1/10W
R20	NRSA02J-153	MGR	15K 1/10W
R21	NRSA02J-153	MGR	15K 1/10W
R22	NRSA02J-105	MGR	1.0M 1/10W
R23	NRSA02J-105	MGR	1.0M 1/10W
R24	NRSA02J-105	MGR	1.0M 1/10W
R25	NRSA02J-154	MGR	150K 1/10W
R26	NRSA02J-154	MGR	150K 1/10W
R27	NRSA02J-154	MGR	150K 1/10W
R28	NRSA02J-184	MGR	180K 1/10W
R29	NRSA02J-184	MGR	180K 1/10W
R30	NRSA02J-184	MGR	180K 1/10W
R31	NRSA02J-682	MGR	6.8K 1/10W
R32	NRSA02J-682	MGR	6.8K 1/10W
R33	NRSA02J-682	MGR	6.8K 1/10W
R34	NRSA02J-563	MGR	56K 1/10W
R35	NRSA02J-563	MGR	56K 1/10W
R36	NRSA02J-563	MGR	56K 1/10W
R37	NRSA02J-563	MGR	56K 1/10W
R38	NRSA02J-563	MGR	56K 1/10W
R39	NRSA02J-563	MGR	56K 1/10W
R40	NRSA02J-682	MGR	6.8K 1/10W
R41	NRSA02J-682	MGR	6.8K 1/10W
R42	NRSA02J-682	MGR	6.8K 1/10W
R43	NRSA02J-223	MGR	22K 1/10W
R44	NRSA02J-223	MGR	22K 1/10W
R45	NRSA02J-223	MGR	22K 1/10W
R46	QVPB613-103	VR	10K B FLARE
R47	QVPB613-103	VR	10K G FLARE
R48	QVPB613-103	VR	10K R FLARE
R49	NRSA02J-680	MGR	68 1/10W
R50	NRSA02J-680	MGR	68 1/10W
R51	NRSA02J-680	MGR	68 1/10W
R52	NRSA02J-221	MGR	220 1/10W
R53	NRSA02J-221	MGR	220 1/10W
R54	NRSA02J-221	MGR	220 1/10W
R55	NRSA02J-392	MGR	3.9K 1/10W
R56	QVPB614-502	VR	5.0K B KNEE
R57	NRSA02J-682	MGR	6.8K 1/10W
R58	QVPB614-502	VR	5.0K G KNEE
R59	QVPB614-502	VR	5.0K R KNEE
R60	QVPB613-103	VR	10K ABL
R61	NRSA02J-682	MGR	6.8K 1/10W
R62	NRSA02J-823	MGR	82K 1/10W
R63	NRSA02J-153	MGR	15K 1/10W
R64	NRSA02J-333	MGR	33K 1/10W
R65	NRSA02J-221	MGR	220 1/10W
R66	NRSA02J-221	MGR	220 1/10W
R67	NRSA02J-221	MGR	220 1/10W

[PR1]

Symbol No.	Part No.	Part Name	Description
R68	NRSA02J-153	MGR	15K 1/10W
R69	NRSA02J-153	MGR	15K 1/10W
R70	NRSA02J-153	MGR	15K 1/10W
R71	NRSA02J-562	MGR	5.6K 1/10W
R72	NRSA02J-562	MGR	5.6K 1/10W
R73	NRSA02J-562	MGR	5.6K 1/10W
R74	NRSA02J-181	MGR	180 1/10W
R75	NRSA02J-181	MGR	180 1/10W
R76	NRSA02J-181	MGR	180 1/10W
R77	NRSA02J-181	MGR	180 1/10W
R78	NRSA02J-181	MGR	180 1/10W
R79	NRSA02J-181	MGR	180 1/10W
R80	NRSA02J-123	MGR	12K 1/10W
R81	NRSA02J-123	MGR	12K 1/10W
R82	NRSA02J-123	MGR	12K 1/10W
R83	NRSA02J-562	MGR	5.6K 1/10W
R84	NRSA02J-562	MGR	5.6K 1/10W
R85	NRSA02J-562	MGR	5.6K 1/10W
R86	QVPB614-102	VR	1.0K B GAMMA
R87	QVPB614-102	VR	1.0K G GAMMA
R88	QVPB614-102	VR	1.0K R GAMMA
R89	NRSA02J-472	MGR	4.7K 1/10W
R90	NRSA02J-472	MGR	4.7K 1/10W
R91	NRSA02J-472	MGR	4.7K 1/10W
R92	NRSA02J-152	MGR	1.5K 1/10W
R93	NRSA02J-472	MGR	4.7K 1/10W
R94	NRSA02J-152	MGR	1.5K 1/10W
R95	NRSA02J-223	MGR	22K 1/10W
R96	NRSA02J-223	MGR	22K 1/10W
R97	QRV141F-1002	M.F.R	10.0K 1/4W
R98	QRV141F-1002	M.F.R	10.0K 1/4W
R99	NRSA02J-330	MGR	33 1/10W
R100	NRSA02J-221	MGR	220 1/10W
R101	NRSA02J-221	MGR	220 1/10W
R102	NRSA02J-221	MGR	220 1/10W
R103	NRSA02J-392	MGR	3.9K 1/10W
R104	NRSA02J-392	MGR	3.9K 1/10W
R105	NRSA02J-392	MGR	3.9K 1/10W
R107	NRSA02J-471	MGR	470 1/10W
R109	NRSA02J-0R0	MGR	0 1/10W
R110	NRSA02J-0R0	MGR	0 1/10W
R111	NRSA02J-0R0	MGR	0 1/10W
C1	QEX41AK-226	E CAP	22 10V
C4	QEJ41AM-475	T CAP	4.7 10V
C5	QEJ41AM-475	T CAP	4.7 10V
C6	QEJ41AM-475	T CAP	4.7 10V
C8	QER41AM-476	E CAP	47 10V
C9	QETA1AM-227	E CAP	220 10V
C10	QER40JM-476	E CAP	47 6.3V
C11	QER40JM-476	E CAP	47 6.3V
C12	QER40JM-476	E CAP	47 6.3V
C13	QEPA0JM-476	NP CAP	47 6.3V
C14	QEPA0JM-476	NP CAP	47 6.3V
C15	QEJ41AM-475	T CAP	4.7 10V
C16	QEJ41AM-475	T CAP	4.7 10V
C17	QEJ41AM-475	T CAP	4.7 10V
C18	QEPA1CM-106	NP CAP	10 16V
C19	QEPA1CM-106	NP CAP	10 16V

Symbol No.	Part No.	Part Name	Description
C20	QEPA1CM-106	NP CAP	10 16V
C24	QEX41AK-226	E CAP	22 10V
C25	QEX41AK-226	E CAP	22 10V
C26	QEX41AK-226	E CAP	22 10V
C27	QEJ41VM-104	T CAP	0.10 35V
C28	QEJ41VM-104	T CAP	0.10 35V
C29	QEJ41VM-104	T CAP	0.10 35V
C30	NCF21EZ-104	C CAP	0.10 25V
C31	NCF21EZ-104	C CAP	0.10 25V
C32	NCF21EZ-104	C CAP	0.10 25V
C33	QER41AM-476	E CAP	47 10V
C34	QEX41AK-226	E CAP	22 10V
C35	QER41AM-476	E CAP	47 10V
C36	QER41AM-476	E CAP	47 10V
C37	QER40JM-476	E CAP	47 6.3V
C38	NCT03CH-9R0	C CAP	9.0P 50V
C39	NCT03CH-9R0	C CAP	9.0P 50V
C40	NCT03CH-9R0	C CAP	9.0P 50V
C41	QER40JM-476	E CAP	47 6.3V
C44	NCF21EZ-104	C CAP	0.10 25V
C45	QETA0JM-337	E CAP	330 6.3V
L1	SCV1488-120	PEAKING COIL	12μ
L2	SCV1488-120	PEAKING COIL	12μ
L3	SCV1488-120	PEAKING COIL	12μ
CN5	SCV0501-001	CONNECTOR	30PIN

CBM1 CBMC2288-5-00A B HI-SENS CBM

Symbol No.	Part No.	Part Name	Description
IC1	RC1496M	IC	
Q1	2SK198(Q.R)	FET	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SK198(Q.R)	FET	MATSUSHITA
Q4	2SK198(Q.R)	FET	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R2	NRSA02J-221	MGR	220 1/10W
R3	NRSA02J-223	MGR	22K 1/10W
R4	NRSA02J-152	MGR	1.5K 1/10W
R5	NRSA02J-332	MGR	3.3K 1/10W
R6	NRSA02J-182	MGR	1.8K 1/10W
R7	NRSA02J-104	MGR	100K 1/10W
R8	NRSA02J-561	MGR	560 1/10W
R9	NRSA02J-104	MGR	100K 1/10W
R10	NRSA02J-101	MGR	100 1/10W
R11	NRSA02J-101	MGR	100 1/10W
R12	NRSA02J-332	MGR	3.3K 1/10W

Symbol No.	Part No.	Part Name	Description
R13	NRSA02J-221	MGR	220 1/10W
R14	NRSA02J-222	MGR	2.2K 1/10W
R15	NRSA02J-103	MGR	10K 1/10W
R16	NRSA02J-333	MGR	33K 1/10W
R17	NRSA02J-683	MGR	68K 1/10W
R18	NRSA02J-332	MGR	3.3K 1/10W
R19	NRSA02J-472	MGR	4.7K 1/10W
C1	NCT03CH-3R0	C CAP	3.0P 50V
C2	NCF21HZ-103	C CAP	0.010 50V

CBM2 CBMC2288-4-00A G HI-SENS CBM

Symbol No.	Part No.	Part Name	Description
IC1	RC1496M	IC	
Q1	2SK198(Q.R)	FET	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SK198(Q.R)	FET	MATSUSHITA
Q4	2SK198(Q.R)	FET	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R2	NRSA02J-221	MGR	220 1/10W
R3	NRSA02J-223	MGR	22K 1/10W
R4	NRSA02J-152	MGR	1.5K 1/10W
R5	NRSA02J-332	MGR	3.3K 1/10W
R6	NRSA02J-182	MGR	1.8K 1/10W
R7	NRSA02J-104	MGR	100K 1/10W
R8	NRSA02J-561	MGR	560 1/10W
R9	NRSA02J-104	MGR	100K 1/10W
R10	NRSA02J-101	MGR	100 1/10W
R11	NRSA02J-101	MGR	100 1/10W
R12	NRSA02J-332	MGR	3.3K 1/10W
R13	NRSA02J-221	MGR	220 1/10W
R14	NRSA02J-222	MGR	2.2K 1/10W
R15	NRSA02J-562	MGR	5.6K 1/10W
R16	NRSA02J-333	MGR	33K 1/10W
R18	NRSA02J-332	MGR	3.3K 1/10W
R19	NRSA02J-472	MGR	4.7K 1/10W
C1	NCT03CH-3R0	C CAP	3.0P 50V

CBM3 CBMC2288-3-00A R HI-SENS CBM

Symbol No.	Part No.	Part Name	Description
IC1	RC1496M	IC	
Q1	2SK198(Q.R)	FET	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SK198(Q.R)	FET	MATSUSHITA
Q4	2SK198(Q.R)	FET	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R2	NRSA02J-221	MGR	220 1/10W

Symbol No.	Part No.	Part Name	Description
R3	NRSA02J-223	MGR	22K 1/10W
R4	NRSA02J-152	MGR	1.5K 1/10W
R5	NRSA02J-332	MGR	3.3K 1/10W
R6	NRSA02J-182	MGR	1.8K 1/10W
R7	NRSA02J-104	MGR	100K 1/10W
R8	NRSA02J-561	MGR	560 1/10W
R9	NRSA02J-104	MGR	100K 1/10W
R10	NRSA02J-101	MGR	100 1/10W
R11	NRSA02J-101	MGR	100 1/10W
R12	NRSA02J-332	MGR	3.3K 1/10W
R13	NRSA02J-221	MGR	220 1/10W
R14	NRSA02J-222	MGR	2.2K 1/10W
R15	NRSA02J-562	MGR	5.6K 1/10W
R16	NRSA02J-333	MGR	33K 1/10W
R17	NRSA02J-563	MGR	56K 1/10W
R18	NRSA02J-332	MGR	3.3K 1/10W
R19	NRSA02J-472	MGR	4.7K 1/10W
C1	NCT03CH-3R0	C CAP	3.0P 50V

CBM4 CBMC2288-6-00A B GAMMA IN CBM

Symbol No.	Part No.	Part Name	Description
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SK198(Q.R)	FET	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SK198(Q.R)	FET	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q9	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-824	MGR	820K 1/10W
R2	NRSA02J-102	MGR	1.0K 1/10W
R3	NRSA02J-153	MGR	15K 1/10W
R4	NRSA02J-103	MGR	10K 1/10W
R5	NRSA02J-472	MGR	4.7K 1/10W
R6	NRSA02J-102	MGR	1.0K 1/10W
R7	NRSA02J-222	MGR	2.2K 1/10W
R8	NRSA02J-222	MGR	2.2K 1/10W
R9	NRSA02J-681	MGR	680 1/10W
R10	NRSA02J-102	MGR	1.0K 1/10W
R11	NRSA02J-682	MGR	6.8K 1/10W
R12	NRSA02J-153	MGR	15K 1/10W
R13	NRSA02J-152	MGR	1.5K 1/10W
R14	NRSA02J-682	MGR	6.8K 1/10W
C1	NCT03CH-8R0	C CAP	8.0P 50V
C2	NCT03CH-470	C CAP	47P 50V

CBM5 CBMC2288-7-01A G GAMMA IN CBM

Symbol No.	Part No.	Part Name	Description
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA

[PR1]

Symbol No.	Part No.	Part Name	Description
Q3	2SK198(Q.R)	FET	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SK198(Q.R)	FET	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q9	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-824	MGR	820K 1/10W
R2	NRSA02J-102	MGR	1.0K 1/10W
R3	NRSA02J-153	MGR	15K 1/10W
R4	NRSA02J-103	MGR	10K 1/10W
R5	NRSA02J-472	MGR	4.7K 1/10W
R6	NRSA02J-102	MGR	1.0K 1/10W
R7	NRSA02J-222	MGR	2.2K 1/10W
R8	NRSA02J-222	MGR	2.2K 1/10W
R9	NRSA02J-681	MGR	680 1/10W
R10	NRSA02J-102	MGR	1.0K 1/10W
R11	NRSA02J-682	MGR	6.8K 1/10W
R12	NRSA02J-153	MGR	15K 1/10W
R13	NRSA02J-152	MGR	1.5K 1/10W
R14	NRSA02J-682	MGR	6.8K 1/10W
C1	NCT03CH-220	C CAP	22P 50V
C2	NCT03CH-470	C CAP	47P 50V

CBM6 CBMC2288-8-00A R GAMMA IN CBM

Symbol No.	Part No.	Part Name	Description
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SK198(Q.R)	FET	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SK198(Q.R)	FET	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q9	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-824	MGR	820K 1/10W
R2	NRSA02J-102	MGR	1.0K 1/10W
R3	NRSA02J-153	MGR	15K 1/10W
R4	NRSA02J-103	MGR	10K 1/10W
R5	NRSA02J-472	MGR	4.7K 1/10W
R6	NRSA02J-102	MGR	1.0K 1/10W
R7	NRSA02J-222	MGR	2.2K 1/10W
R8	NRSA02J-222	MGR	2.2K 1/10W
R9	NRSA02J-681	MGR	680 1/10W
R10	NRSA02J-102	MGR	1.0K 1/10W
R11	NRSA02J-682	MGR	6.8K 1/10W
R12	NRSA02J-153	MGR	15K 1/10W
R13	NRSA02J-152	MGR	1.5K 1/10W
R14	NRSA02J-682	MGR	6.8K 1/10W
C1	NCT03CH-8R0	C CAP	8.0P 50V
C2	NCT03CH-470	C CAP	47P 50V

7.9 PR2 BOARD ASSEMBLY 09

09☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	TC4053BF	I.C.(M)	TOSHIBA
IC2	TC4053BF	I.C.(M)	TOSHIBA
IC3	TC4053BF	I.C.(M)	TOSHIBA
IC4	TC40H193F	IC	TOSHIBA
IC5	SCV0592-001	I.C.(H)	JVC
Q1	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q10	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q38	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q39	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q40	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q41	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q42	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q43	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q44	2SK198(Q.R)	FET	MATSUSHITA
Q45	2SK198(Q.R)	FET	MATSUSHITA
Q46	2SK198(Q.R)	FET	MATSUSHITA
Q47	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q48	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q49	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q50	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q51	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q52	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q53	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q54	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q55	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q56	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q57	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q58	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q59	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q60	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q61	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q62	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q63	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q64	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q65	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q66	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q67	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q68	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q69	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q70	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q71	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q79	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q80	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q81	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q82	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q83	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q84	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q85	DTC124EK	TRANSISTOR	ROHM
D1	MA152A	DIODE	MATSUSHITA
D2	HZM6CTR	ZENER DIODE	HITACHI

Symbol No.	Part No.	Part Name	Description
D3	MA152WA	DIODE	MATSUSHITA
D4	MA152A	DIODE	MATSUSHITA
R1	NRSA02J-471	MGR	470 1/10W
R2	NRSA02J-821	MGR	820 1/10W
R3	NRSA02J-471	MGR	470 1/10W
R4	NRSA02J-222	MGR	2.2K 1/10W
R5	NRSA02J-122	MGR	1.2K 1/10W
R6	NRSA02J-222	MGR	2.2K 1/10W
R7	QVPB614-102	VR	1.0K B GAIN
R8	QVPB614-102	VR	1.0K G GAIN
R9	QVPB614-102	VR	1.0K R GAIN
R10	NRSA02J-102	MGR	1.0K 1/10W
R11	NRSA02J-102	MGR	1.0K 1/10W
R12	NRSA02J-102	MGR	1.0K 1/10W
R13	NRSA02J-152	MGR	1.5K 1/10W
R14	NRSA02J-102	MGR	1.0K 1/10W
R15	NRSA02J-271	MGR	270 1/10W
R16	NRSA02J-392	MGR	3.9K 1/10W
R17	NRSA02J-273	MGR	27K 1/10W
R18	NRSA02J-511	MGR	510 1/10W
R20	NRSA02J-511	MGR	510 1/10W
R21	NRSA02J-511	MGR	510 1/10W
R23	NRSA02J-511	MGR	510 1/10W
R24	NRSA02J-682	MGR	6.8K 1/10W
R26	NRSA02J-682	MGR	6.8K 1/10W
R57	NRSA02J-122	MGR	1.2K 1/10W
R58	NRSA02J-122	MGR	1.2K 1/10W
R59	NRSA02J-122	MGR	1.2K 1/10W
R60	NRSA02J-152	MGR	1.5K 1/10W
R61	NRSA02J-152	MGR	1.5K 1/10W
R62	NRSA02J-152	MGR	1.5K 1/10W
R63	NRSA02J-272	MGR	2.7K 1/10W
R64	NRSA02J-272	MGR	2.7K 1/10W
R65	NRSA02J-272	MGR	2.7K 1/10W
R66	QVPB614-202	VR	2K B NEGA BLK
R67	QVPB614-202	VR	2K G NEGA BLK
R68	QVPB614-202	VR	2K R NEGA BLK
R69	NRSA02J-682	MGR	6.8K 1/10W
R70	NRSA02J-682	MGR	6.8K 1/10W
R71	NRSA02J-682	MGR	6.8K 1/10W
R72	NRSA02J-104	MGR	100K 1/10W
R73	NRSA02J-104	MGR	100K 1/10W
R74	NRSA02J-104	MGR	100K 1/10W
R75	NRSA02J-474	MGR	470K 1/10W
R76	NRSA02J-474	MGR	470K 1/10W
R77	NRSA02J-474	MGR	470K 1/10W
R78	NRSA02J-682	MGR	6.8K 1/10W
R79	NRSA02J-682	MGR	6.8K 1/10W
R80	NRSA02J-682	MGR	6.8K 1/10W
R81	NRSA02J-472	MGR	4.7K 1/10W
R82	NRSA02J-472	MGR	4.7K 1/10W
R83	NRSA02J-472	MGR	4.7K 1/10W
R84	NRSA02J-104	MGR	100K 1/10W
R85	NRSA02J-102	MGR	1.0K 1/10W
R86	NRSA02J-102	MGR	1.0K 1/10W
R87	NRSA02J-102	MGR	1.0K 1/10W
R88	NRSA02J-222	MGR	2.2K 1/10W
R89	QVPB613-202	VR	2.0K B+R

Symbol No.	Part No.	Part Name	Description
R90	NRSA02J-123	MGR	12K 1/10W
R91	QVPB613-202	VR	2.0K B-R
R92	NRSA02J-123	MGR	12K 1/10W
R93	NRSA02J-123	MGR	12K 1/10W
R94	QVPB613-202	VR	2.0K G-R
R95	NRSA02J-123	MGR	12K 1/10W
R96	QVPB613-202	VR	2.0K R-G
R97	QVPB613-202	VR	2.0K B-R
R98	NRSA02J-123	MGR	12K 1/10W
R99	QVPB613-202	VR	2.0K G-B
R100	NRSA02J-123	MGR	12K 1/10W
R101	NRSA02J-471	MGR	470 1/10W
R102	NRSA02J-471	MGR	470 1/10W
R103	NRSA02J-471	MGR	470 1/10W
R104	NRSA02J-471	MGR	470 1/10W
R105	NRSA02J-471	MGR	470 1/10W
R106	NRSA02J-471	MGR	470 1/10W
R107	NRSA02J-183	MGR	18K 1/10W
R108	NRSA02J-272	MGR	2.7K 1/10W
R109	NRSA02J-332	MGR	3.3K 1/10W
R110	NRSA02J-683	MGR	68K 1/10W
R111	NRSA02J-223	MGR	22K 1/10W
R112	NRSA02J-223	MGR	22K 1/10W
R113	NRSA02J-474	MGR	470K 1/10W
R114	NRSA02J-122	MGR	1.2K 1/10W
R115	NRSA02J-151	MGR	150 1/10W
R116	NRSA02J-472	MGR	4.7K 1/10W
R117	NRSA02J-223	MGR	22K 1/10W
R118	NRSA02J-223	MGR	22K 1/10W
R119	NRSA02J-152	MGR	1.5K 1/10W
R120	NRSA02J-183	MGR	18K 1/10W
R121	QVPB614-502	VR	5.0K B W.CLIP
R122	QVPB614-502	VR	5.0K G W.CLIP
R123	QVPB614-502	VR	5.0K R W.CLIP
R124	NRSA02J-822	MGR	8.2K 1/10W
R125	NRSA02J-392	MGR	3.9K 1/10W
R126	NRSA02J-103	MGR	10K 1/10W
R127	NRSA02J-562	MGR	5.6K 1/10W
R128	NRSA02J-123	MGR	12K 1/10W
R129	NRSA02J-183	MGR	18K 1/10W
R130	NRSA02J-102	MGR	1.0K 1/10W
R131	NRSA02J-153	MGR	15K 1/10W
R132	NRSA02J-183	MGR	18K 1/10W
R133	NRSA02J-272	MGR	2.7K 1/10W
R134	NRSA02J-152	MGR	1.5K 1/10W
R135	NRSA02J-272	MGR	2.7K 1/10W
R136	NRSA02J-272	MGR	2.7K 1/10W
R137	NRSA02J-222	MGR	2.2K 1/10W
R138	NRSA02J-103	MGR	10K 1/10W
R139	NRSA02J-104	MGR	100K 1/10W
R140	NRSA02J-392	MGR	3.9K 1/10W
R141	NRSA02J-151	MGR	150 1/10W
R142	NRSA02J-151	MGR	150 1/10W
R143	NRSA02J-151	MGR	150 1/10W
R144	NRSA02J-123	MGR	12K 1/10W
R150	NRSA02J-474	MGR	470K 1/10W
R151	NRSA02J-563	MGR	56K 1/10W
R153	NRSA02J-100	MGR	10 1/10W
R154	NRSA02J-683	MGR	68K 1/10W

Symbol No.	Part No.	Part Name	Description
R155	NRSA02J-563	MGR	56K 1/10W
R156	NRSA02J-332	MGR	3.3K 1/10W
R157	NRSA02J-223	MGR	22K 1/10W
R158	NRSA02J-123	MGR	12K 1/10W
R159	NRSA02J-471	MGR	470 1/10W
R160	NRSA02J-681	MGR	680 1/10W
R161	QVPB614-102	VR	1.0K TEST GAIN
R162	NRSA02J-222	MGR	2.2K 1/10W
R163	NRSA02J-821	MGR	820 1/10W
R164	NRSA02J-123	MGR	12K 1/10W
R165	NRSA02J-472	MGR	4.7K 1/10W
R166	NRSA02J-472	MGR	4.7K 1/10W
R167	NRSA02J-392	MGR	3.9K 1/10W
R168	NRSA02J-102	MGR	1.0K 1/10W
R169	NRSA02J-560	MGR	56 1/10W
R170	NRSA02J-103	MGR	10K 1/10W
R171	NRSA02J-680	MGR	68 1/10W
R172	NRSA02J-560	MGR	56 1/10W
R173	NRSA02J-682	MGR	6.8K 1/10W
C1	QER41AM-476	E CAP	47 10V
C2	NCF21EZ-104	C CAP	0.10 25V
C3	QER40JM-476	E CAP	47 6.3V
C4	NCT03CH-101	C CAP	100P 50V
C5	QER40JM-476	E CAP	47 6.3V
C6	QEPA1CM-106	NP CAP	10 16V
C7	QEPA1CM-106	NP CAP	10 16V
C8	QEPA1CM-106	NP CAP	10 16V
C9	QER41AM-476	E CAP	47 10V
C10	QER41AM-476	E CAP	47 10V
C11	QER41AM-476	E CAP	47 10V
C12	QER41EM-106	E CAP	10 25V
C13	QER41EM-106	E CAP	10 25V
C14	QER41EM-106	E CAP	10 25V
C15	QEPA1CM-106	NP CAP	10 16V
C16	QEPA1CM-106	NP CAP	10 16V
C17	QEPA1CM-106	NP CAP	10 16V
C18	QEPA0JM-476	NP CAP	47 6.3V
C19	QEPA0JM-476	NP CAP	47 6.3V
C20	QEPA0JM-476	NP CAP	47 6.3V
C21	NCT03CH-180	C CAP	18P 50V
C22	QER40JM-107	E CAP	100 6.3V
C23	QER41HM-105	E CAP	1.0 50V
C24	QER41AM-476	E CAP	47 10V
C25	QER40JM-476	E CAP	47 6.3V
C26	NCT03CH-150	C CAP	15P 50V
C27	QER40JM-476	E CAP	47 6.3V
C28	QAT3120-200	TRIM.CAPACITOR	30P B DELAY
C29	QER41EM-106	E CAP	10 25V
C31	QER40JM-476	E CAP	47 6.3V
C32	QER40JM-476	E CAP	47 6.3V
C33	QER40JM-476	E CAP	47 6.3V
C34	NCT03CH-560	C CAP	56P 50V
C35	NCT03CH-470	C CAP	47P 50V
C36	NCT03CH-680	C CAP	68P 50V
C37	QER40JM-476	E CAP	47 6.3V
C38	QER40JM-107	E CAP	100 6.3V
C39	NCF21EZ-104	C CAP	0.10 25V
C40	NCF21EZ-104	C CAP	0.10 25V

Symbol No.	Part No.	Part Name	Description
DL1	SCV1684-001	DELAY LINE	
DL2	SCV1684-001	DELAY LINE	
SW1	SCV1682-001	ROTARY SWICH	B DELAY
SW2	SCV1682-001	ROTARY SWICH	R DELAY
S3	SCV1080-003	SOCKET	MATRIX ON/OFF
S4	SCV1080-002	SOCKET	
CN4	SCV0501-001	CONNECTOR	30PIN

CBM1/2/3 CBMC2288-2-00A W&B CLIP CBM

Symbol No.	Part No.	Part Name	Description
Q1	2SK198(Q.R)	FET	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q9	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q10	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-333	MGR	33K 1/10W
R2	NRSA02J-471	MGR	470 1/10W
R3	NRSA02J-332	MGR	3.3K 1/10W
R4	NRSA02J-332	MGR	3.3K 1/10W
R5	NRSA02J-103	MGR	10K 1/10W
R6	NRSA02J-562	MGR	5.6K 1/10W
R7	NRSA02J-562	MGR	5.6K 1/10W
R8	NRSA02J-472	MGR	4.7K 1/10W
R9	NRSA02J-104	MGR	100K 1/10W
R10	NRSA02J-332	MGR	3.3K 1/10W
R11	NRSA02J-332	MGR	3.3K 1/10W
R12	NRSA02J-152	MGR	1.5K 1/10W
R13	NRSA02J-182	MGR	1.8K 1/10W
R14	NRSA02J-223	MGR	22K 1/10W

CBM4 CBMC2288-1-00A PIX IN CBM

Symbol No.	Part No.	Part Name	Description
IC1	TC4051BF	IC	TOSHIBA
Q1	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SC2295(B.C)	TRANSISTOR	MATSUSHITA

7.10 CC1 BOARD ASSEMBLY 10

1 0 ☐ ☐ ☐ ☐ ☐ ☐

Symbol No.	Part No.	Part Name	Description
R1	NRSA02J-681	MGR	680 1/10W
R2	NRSA02J-392	MGR	3.9K 1/10W
R3	NRSA02J-332	MGR	3.3K 1/10W
R4	NRSA02J-562	MGR	5.6K 1/10W
R5	NRSA02J-562	MGR	5.6K 1/10W
R6	NRSA02J-562	MGR	5.6K 1/10W
R7	NRSA02J-821	MGR	820 1/10W
R8	NRSA02J-822	MGR	8.2K 1/10W
R9	NRSA02J-821	MGR	820 1/10W
R10	NRSA02J-822	MGR	8.2K 1/10W
R11	NRSA02J-821	MGR	820 1/10W
R12	NRSA02J-822	MGR	8.2K 1/10W
R13	NRSA02J-222	MGR	2.2K 1/10W
R14	NRSA02J-222	MGR	2.2K 1/10W
R15	NRSA02J-222	MGR	2.2K 1/10W
R16	NRSA02J-222	MGR	2.2K 1/10W
R17	NRSA02J-104	MGR	100K 1/10W
R18	NRSA02J-393	MGR	39K 1/10W
R19	NRSA02J-393	MGR	39K 1/10W
R20	NRSA02J-393	MGR	39K 1/10W
R21	NRSA02J-104	MGR	100K 1/10W
R22	NRSA02J-104	MGR	100K 1/10W
R23	NRSA02J-104	MGR	100K 1/10W
R24	NRSA02J-221	MGR	220 1/10W

Symbol No.	Part No.	Part Name	Description
IC1	UA733CNS	IC	
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q9	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q10	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q11	2SK198(Q.R)	FET	MATSUSHITA
Q12	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q13	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q14	2SK198(Q.R)	FET	MATSUSHITA
Q15	DTC124EK	TRANSISTOR	ROHM
Q16	2SK198(Q.R)	FET	MATSUSHITA
Q17	DTC124EK	TRANSISTOR	ROHM
Q19	2SK198(Q.R)	FET	MATSUSHITA
Q21	2SK198(Q.R)	FET	MATSUSHITA
Q22	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q23	2SK198(Q.R)	FET	MATSUSHITA
Q24	2SK198(Q.R)	FET	MATSUSHITA
Q25	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q26	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q27	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q28	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q29	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q30	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q31	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q32	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q33	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q34	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q35	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
D1	HSM276S	DIODE	HITACHI
D2	HSM276S	DIODE	HITACHI
R1	NRSA02J-561	MGR	560 1/10W
R2	NRSA02J-103	MGR	10K 1/10W
R3	NRSA02J-122	MGR	1.2K 1/10W
R4	NRSA02J-471	MGR	470 1/10W
R5	NRSA02J-471	MGR	470 1/10W
R6	NRSA02J-682	MGR	6.8K 1/10W
R7	NRSA02J-472	MGR	4.7K 1/10W
R8	NRSA02J-682	MGR	6.8K 1/10W
R9	QVPB613-202	VR	2K NOISE SLICE
R10	NRSA02J-472	MGR	4.7K 1/10W
R11	NRSA02J-152	MGR	1.5K 1/10W
R12	NRSA02J-221	MGR	220 1/10W
R13	NRSA02J-102	MGR	1.0K 1/10W
R14	NRSA02J-152	MGR	1.5K 1/10W
R15	NRSA02J-472	MGR	4.7K 1/10W
R16	NRSA02J-101	MGR	100 1/10W
R17	NRSA02J-152	MGR	1.5K 1/10W
R18	NRSA02J-561	MGR	560 1/10W
R19	NRSA02J-472	MGR	4.7K 1/10W
R20	NRSA02J-561	MGR	560 1/10W

[CC1]

Symbol No.	Part No.	Part Name	Description	
R21	NRSA02J-472	MGR	4.7K	1/10W
R22	NRSA02J-102	MGR	1.0K	1/10W
R23	NRSA02J-152	MGR	1.5K	1/10W
R24	NRSA02J-272	MGR	2.7K	1/10W
R25	NRSA02J-472	MGR	4.7K	1/10W
R26	NRSA02J-682	MGR	6.8K	1/10W
R27	QVPB613-502	VR	5.0K	V BAL
R28	NRSA02J-222	MGR	2.2K	1/10W
R29	NRSA02J-222	MGR	2.2K	1/10W
R30	NRSA02J-562	MGR	5.6K	1/10W
R31	NRSA02J-122	MGR	1.2K	1/10W
R32	NRSA02J-222	MGR	2.2K	1/10W
R33	QVPB613-202	VR	2.0K	V LEVEL
R34	NRSA02J-332	MGR	3.3K	1/10W
R35	NRSA02J-472	MGR	4.7K	1/10W
R36	NRSA02J-333	MGR	33K	1/10W
R37	NRSA02J-103	MGR	10K	1/10W
R38	NRSA02J-332	MGR	3.3K	1/10W
R39	NRSA02J-272	MGR	2.7K	1/10W
R40	NRSA02J-821	MGR	820	1/10W
R41	NRSA02J-272	MGR	2.7K	1/10W
R42	NRSA02J-822	MGR	8.2K	1/10W
R43	QVPB613-502	VR	5.0K	LEVEL DEP
R44	NRSA02J-103	MGR	10K	1/10W
R45	NRSA02J-823	MGR	82K	1/10W
R46	NRSA02J-103	MGR	10K	1/10W
R47	NRSA02J-104	MGR	100K	1/10W
R48	NRSA02J-223	MGR	22K	1/10W
R49	NRSA02J-104	MGR	100K	1/10W
R50	NRSA02J-223	MGR	22K	1/10W
R51	NRSA02J-223	MGR	22K	1/10W
R52	NRSA02J-105	MGR	1.0M	1/10W
R53	NRSA02J-101	MGR	100	1/10W
R54	NRSA02J-681	MGR	680	1/10W
R55	NRSA02J-222	MGR	2.2K	1/10W
R57	NRSA02J-222	MGR	2.2K	1/10W
R58	NRSA02J-103	MGR	10K	1/10W
R59	NRSA02J-103	MGR	10K	1/10W
R60	NRSA02J-472	MGR	4.7K	1/10W
R61	NRSA02J-103	MGR	10K	1/10W
R62	NRSA02J-103	MGR	10K	1/10W
R63	NRSA02J-103	MGR	10K	1/10W
R64	NRSA02J-681	MGR	680	1/10W
R65	NRSA02J-222	MGR	2.2K	1/10W
R66	NRSA02J-223	MGR	22K	1/10W
R67	NRSA02J-222	MGR	2.2K	1/10W
R68	QVPB613-202	VR	2.0K	H LEVEL
R69	NRSA02J-223	MGR	22K	1/10W
R70	NRSA02J-222	MGR	2.2K	1/10W
R71	NRSA02J-102	MGR	1.0K	1/10W
R72	NRSA02J-102	MGR	1.0K	1/10W
R73	NRSA02J-561	MGR	560	1/10W
R74	NRSA02J-561	MGR	560	1/10W
R75	NRSA02J-222	MGR	2.2K	1/10W
R76	NRSA02J-221	MGR	220	1/10W
R77	NRSA02J-222	MGR	2.2K	1/10W
R78	NRSA02J-221	MGR	220	1/10W
R79	NRSA02J-222	MGR	2.2K	1/10W
R80	NRSA02J-333	MGR	33K	1/10W
R81	NRSA02J-682	MGR	6.8K	1/10W

Symbol No.	Part No.	Part Name	Description	
R82	NRSA02J-391	MGR	390	1/10W
R83	NRSA02J-472	MGR	4.7K	1/10W
R84	NRSA02J-223	MGR	22K	1/10W
R85	NRSA02J-472	MGR	4.7K	1/10W
R86	NRSA02J-681	MGR	680	1/10W
R87	NRSA02J-223	MGR	22K	1/10W
R88	NRSA02J-102	MGR	1.0K	1/10W
R89	NRSA02J-471	MGR	470	1/10W
R90	NRSA02J-222	MGR	2.2K	1/10W
R91	NRSA02J-103	MGR	10K	1/10W
R92	NRSA02J-152	MGR	1.5K	1/10W
R93	NRSA02J-152	MGR	1.5K	1/10W
C1	QER41AM-476	E CAP	47	10V
C2	QER41EM-106	E CAP	10	25V
C3	QER41EM-106	E CAP	10	25V
C4	QER41EM-106	E CAP	10	25V
C5	NCT03CH-220	C CAP	22P	50V
C6	QER40JM-476	E CAP	47	6.3V
C7	QER41CM-476	E CAP	47	16V
C8	QEJ41AM-106	T CAP	10	10V
C9	NCT03CH-101	C CAP	100P	50V
C10	NCT03CH-100	C CAP	10P	50V
C11	QER41AM-476	E CAP	47	10V
C12	QEJ41VM-105	T CAP	1.0	35V
C13	NCT03CH-390	C CAP	39P	50V
C14	NCF21EZ-104	C CAP	0.10	25V
C15	QER41EM-106	E CAP	10	25V
C16	NCT03CH-220	C CAP	22P	50V
C17	QER40JM-476	E CAP	47	6.3V
C18	QER41EM-106	E CAP	10	25V
C19	NCF21EZ-104	C CAP	0.10	25V
C20	QER40JM-476	E CAP	47	6.3V
C21	QER40JM-476	E CAP	47	6.3V
C23	QER41EM-106	E CAP	10	25V
C25	QEJ41VM-105	T CAP	1.0	35V
C26	QER40JM-476	E CAP	47	6.3V
C27	QER41AM-476	E CAP	47	10V
C28	QEPA0JM-476	NP CAP	47	6.3V
C29	QEPA0JM-476	NP CAP	47	6.3V
C30	NCT03CH-100	C CAP	10P	50V
C31	NCT03CH-100	C CAP	10P	50V
C32	NCF21EZ-104	C CAP	0.10	25V
C34	QEPA0JM-476	NP CAP	47	6.3V
C35	QEPA0JM-476	NP CAP	47	6.3V
C36	NCT03CH-100	C CAP	10P	50V
C37	NCT03CH-100	C CAP	10P	50V
C38	QER41AM-476	E CAP	47	10V
C39	QEJ41VM-105	T CAP	1.0	35V
C40	QEJ41VM-105	T CAP	1.0	35V
C41	QEJ41VM-105	T CAP	1.0	35V
C43	QEJ41CM-225	T CAP	2.2	16V
C44	QEPA1EM-475	NP CAP	4.7	25V
C45	QEPA1EM-475	NP CAP	4.7	25V(U)
C46	NCT03CH-270	C CAP	27P	50V
C47	NCF21EZ-104	C CAP	0.10	25V
C48	NCF21HZ-103	C CAP	0.010	50V(E)

Symbol No.	Part No.	Part Name	Description
L1	SCV0331-100	PEAKING COIL	10μ
L2	SCV0331-120	PEAKING COIL	12μ
L3	SCV0331-390	PEAKING COIL	39μ
L4	SCV0331-2R2	PEAKING COIL	2.2μ
L5	SCV0331-121	PEAKING COIL	120μ
DL1	SCV0573-002	DELAY LINE	140nsec
DL2	SCV0572-002	DELAY LINE	120nsec
CN20	SCV1227-013	CONNECTOR	13PIN
CN32	SCV1227-002	CONNECTOR	2PIN
C45	QEPA1EM-475	NP E.CAPACITOR	4.7 25V(E)

CBM1/2 CBMC2288-B-00A AGC AMP CBM

Symbol No.	Part No.	Part Name	Description
IC1	UA733CNS	IC	
Q1	2SK198(Q.R)	FET	MATSUSHITA
R1	NRSA02J-470	MGR	47 1/10W
R2	NRSA02J-470	MGR	47 1/10W
R3	NRSA02J-224	MGR	220K 1/10W
R4	NRSA02J-104	MGR	100K 1/10W
R5	NRSA02J-680	MGR	68 1/10W
R6	NRSA02J-101	MGR	100 1/10W
R7	NRSA02J-104	MGR	100K 1/10W
R8	NRSA02J-472	MGR	4.7K 1/10W
R9	NRSA02J-472	MGR	4.7K 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V

CBM3 CBMC2288-C-00A AGC DET CBM

Symbol No.	Part No.	Part Name	Description
IC1	RC062M	I.C.(M)	JRC
Q1	2SK198(Q.R)	FET	MATSUSHITA
Q2	2SK198(Q.R)	FET	MATSUSHITA
Q3	2SK198(Q.R)	FET	MATSUSHITA
Q4	2SK198(Q.R)	FET	MATSUSHITA
Q5	2SK198(Q.R)	FET	MATSUSHITA
Q6	2SK198(Q.R)	FET	MATSUSHITA
R1	NRSA02J-103	MGR	10K 1/10W
R2	NRSA02J-563	MGR	56K 1/10W
R3	NRSA02J-563	MGR	56K 1/10W
R4	NRSA02J-563	MGR	56K 1/10W
R5	NRSA02J-103	MGR	10K 1/10W
R6	NRSA02J-333	MGR	33K 1/10W
R7	NRSA02J-333	MGR	33K 1/10W
R8	NRSA02J-333	MGR	33K 1/10W

CBM4 CBMC2288-D-01A H CONTOUR CBM

Symbol No.	Part No.	Part Name	Description
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
D1	MA152A	DIODE	MATSUSHITA
R1	NRSA02J-272	MGR	2.7K 1/10W
R2	NRSA02J-182	MGR	1.8K 1/10W
R3	NRSA02J-272	MGR	2.7K 1/10W
R4	NRSA02J-272	MGR	2.7K 1/10W
R5	NRSA02J-681	MGR	680 1/10W
R6	NRSA02J-681	MGR	680 1/10W
R7	NRSA02J-271	MGR	270 1/10W
R8	NRSA02J-103	MGR	10K 1/10W
R9	NRSA02J-681	MGR	680 1/10W
R10	NRSA02J-561	MGR	560 1/10W
R11	NRSA02J-821	MGR	820 1/10W
R12	NRSA02J-103	MGR	10K 1/10W
R13	NRSA02J-223	MGR	22K 1/10W
R14	NRSA02J-821	MGR	820 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V

7.11 CC2 BOARD ASSEMBLY 11

11☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	RC1496M	IC	
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q3	2SC2480(S.T)	TRANSISTOR	MATSUSHITA
Q4	2SC2480(S.T)	TRANSISTOR	MATSUSHITA
Q5	2SC2480(S.T)	TRANSISTOR	MATSUSHITA
Q6	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q8	2SC2480(S.T)	TRANSISTOR	MATSUSHITA
Q9	2SC2480(S.T)	TRANSISTOR	MATSUSHITA
Q10	2SC2480(S.T)	TRANSISTOR	MATSUSHITA
Q11	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-472	MGR	4.7K 1/10W
R2	NRSA02J-221	MGR	220 1/10W
R3	NRSA02J-103	MGR	10K 1/10W
R4	NRSA02J-471	MGR	470 1/10W
R5	NRSA02J-222	MGR	2.2K 1/10W
R6	NRSA02J-471	MGR	470 1/10W
R7	NRSA02J-682	MGR	6.8K 1/10W
R8	NRSA02J-153	MGR	15K 1/10W
R9	NRSA02J-123	MGR	12K 1/10W
R10	NRSA02J-471	MGR	470 1/10W
R11	NRSA02J-223	MGR	22K 1/10W
R12	NRSA02J-102	MGR	1.0K 1/10W
R13	NRSA02J-4R7	MGR	4.7 1/10W
R14	NRSA02J-4R7	MGR	4.7 1/10W
R15	NRSA02J-100	MGR	10 1/10W
R16	NRSA02J-560	MGR	56 1/10W
R17	NRSA02J-123	MGR	12K 1/10W
R18	NRSA02J-153	MGR	15K 1/10W
R19	NRSA02J-682	MGR	6.8K 1/10W
R20	NRSA02J-153	MGR	15K 1/10W
R21	NRSA02J-102	MGR	1.0K 1/10W
R22	NRSA02J-4R7	MGR	4.7 1/10W
R23	NRSA02J-4R7	MGR	4.7 1/10W
R24	NRSA02J-100	MGR	10 1/10W
R25	NRSA02J-560	MGR	56 1/10W
R26	NRSA02J-102	MGR	1.0K 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V
C2	NCT03CH-470	C CAP	47P 50V
C3	NCF21EZ-104	C CAP	0.10 25V
C4	QEJ41AM-106	T CAP	10 10V
C5	NCF21EZ-104	C CAP	0.10 25V
C6	NCF21EZ-104	C CAP	0.10 25V
C7	NCF21EZ-104	C CAP	0.10 25V
C8	QEJ41CM-106	T CAP	10 16V
DL1	SCV1808-001	DELAY LINE	(U)
	SCV1809-001	DELAY LINE	(E)

7.12 SE(NTSC) BOARD ASSEMBLY 12

for U version

12☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC5	TC40H004F	IC	TOSHIBA
IC6	TC50H000F	IC	TOSHIBA
IC7	TC40H000F	IC	TOSHIBA
IC8	TC4053BF	I.C.(M)	TOSHIBA
Q1	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q9	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q10	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q11	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q12	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q13	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q14	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q15	DTC124EK	TRANSISTOR	ROHM
Q16	2SC2406(S.T)	TRANSISTOR	MATSUSHITA
Q17	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q18	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q19	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q20	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q21	2SK198(Q.R)	FET	MATSUSHITA
Q22	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q25	2SK198(Q.R)	FET	MATSUSHITA
Q26	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q27	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q28	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q29	2SK198(Q.R)	FET	MATSUSHITA
Q30	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q31	DTA124EK	TRANSISTOR	ROHM
Q32	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
D1	MA152A	DIODE	MATSUSHITA
D2	MA152A	DIODE	MATSUSHITA
D4	MA153	DIODE	MATSUSHITA
D6	MA152A	DIODE	MATSUSHITA
D8	MA152A	DIODE	MATSUSHITA
R1	NRSA02J-222	MGR	2.2K 1/10W
R2	QVPB614-202	VR	2K R-Y OUT GAIN
R3	NRSA02J-222	MGR	2.2K 1/10W
R4	NRSA02J-152	MGR	1.5K 1/10W
R5	NRSA02J-222	MGR	2.2K 1/10W
R6	NRSA02J-392	MGR	3.9K 1/10W
R7	QVPB614-202	VR	2K B-Y OUT GAIN
R8	NRSA02J-272	MGR	2.7K 1/10W
R9	NRSA02J-182	MGR	1.8K 1/10W
R10	NRSA02J-222	MGR	2.2K 1/10W
R11	NRSA02J-152	MGR	1.5K 1/10W
R12	NRSA02J-332	MGR	3.3K 1/10W
R13	NRSA02J-561	MGR	560 1/10W
R14	NRSA02J-274	MGR	270K 1/10W
R15	NRSA02J-473	MGR	47K 1/10W
R16	QVPB614-502	VR	5.0K SYNC LEVEL
R17	NRSA02J-472	MGR	4.7K 1/10W

Symbol No.	Part No.	Part Name	Description
R18	NRSA02J-681	MGR	680 1/10W
R19	QVPB614-501	VR	500 M.Y LEVEL
R20	NRSA02J-681	MGR	680 1/10W
R21	NRSA02J-223	MGR	22K 1/10W
R22	NRSA02J-123	MGR	12K 1/10W
R23	NRSA02J-471	MGR	470 1/10W
R24	NRSA02J-101	MGR	100 1/10W
R25	NRSA02J-101	MGR	100 1/10W
R26	NRSA02J-472	MGR	4.7K 1/10W
R27	QVPB613-202	VR	2.0K Y1 LEVEL
R28	NRSA02J-681	MGR	680 1/10W
R29	NRSA02J-102	MGR	1.0K 1/10W
R30	NRSA02J-102	MGR	1.0K 1/10W
R31	NRSA02J-102	MGR	1.0K 1/10W
R32	NRSA02J-122	MGR	1.2K 1/10W
R33	NRSA02J-182	MGR	1.8K 1/10W
R34	NRSA02J-153	MGR	15K 1/10W
R35	NRSA02J-243	MGR	24K 1/10W
R36	QVPB613-202	VR	2.0K Y2 LEVEL
R37	NRSA02J-122	MGR	1.2K 1/10W
R38	NRSA02J-122	MGR	1.2K 1/10W
R39	NRSA02J-681	MGR	680 1/10W
R40	NRSA02J-392	MGR	3.9K 1/10W
R41	NRSA02J-393	MGR	39K 1/10W
R42	NRSA02J-123	MGR	12K 1/10W
R43	NRSA02J-822	MGR	8.2K 1/10W
R44	NRSA02J-822	MGR	8.2K 1/10W
R45	NRSA02J-104	MGR	100K 1/10W
R46	NRSA02J-332	MGR	3.3K 1/10W
R47	NRSA02J-681	MGR	680 1/10W
R48	NRSA02J-122	MGR	1.2K 1/10W
R49	NRSA02J-153	MGR	15K 1/10W
R50	NRSA02J-103	MGR	10K 1/10W
R51	NRSA02J-122	MGR	1.2K 1/10W
R52	NRSA02J-102	MGR	1.0K 1/10W
R53	NRSA02J-822	MGR	8.2K 1/10W
R54	NRSA02J-101	MGR	100 1/10W
R55	NRSA02J-2R2	MGR	2.2 1/10W
R56	NRSA02J-2R2	MGR	2.2 1/10W
R57	NRSA02J-560	MGR	56 1/10W
R58	NRSA02J-562	MGR	5.6K 1/10W
R59	NRSA02J-103	MGR	10K 1/10W
R60	NRSA02J-472	MGR	4.7K 1/10W
R61	NRSA02J-392	MGR	3.9K 1/10W
R62	NRSA02J-392	MGR	3.9K 1/10W
R63	NRSA02J-105	MGR	1.0M 1/10W
R64	NRSA02J-223	MGR	22K 1/10W
R65	NRSA02J-101	MGR	100 1/10W
R66	NRSA02J-472	MGR	4.7K 1/10W
R67	NRSA02J-472	MGR	4.7K 1/10W
R68	NRSA02J-182	MGR	1.8K 1/10W
R69	NRSA02J-472	MGR	4.7K 1/10W
R70	NRSA02J-151	MGR	150 1/10W
R73	QVPB613-103	VR	10K BURST PHASE
R74	NRSA02J-123	MGR	12K 1/10W
R75	NRSA02J-392	MGR	3.9K 1/10W
R76	NRSA02J-105	MGR	1.0M 1/10W
R77	NRSA02J-223	MGR	22K 1/10W
R78	NRSA02J-102	MGR	1.0K 1/10W

Symbol No.	Part No.	Part Name	Description
R79	NRSA02J-102	MGR	1.0K 1/10W
R80	QVPB614-501	VR	500 CHROMA
R81	NRSA02J-561	MGR	560 1/10W
R82	NRSA02J-223	MGR	22K 1/10W
R83	NRSA02J-103	MGR	10K 1/10W
R84	NRSA02J-101	MGR	100 1/10W
R85	QVPB613-202	VR	2K CHRO.OUT LVL
R86	NRSA02J-102	MGR	1.0K 1/10W
R87	NRSA02J-392	MGR	3.9K 1/10W
R88	QVPB614-102	VR	1.0K C.BAL
R89	QVPB614-102	VR	1.0K C.BAL
R90	NRSA02J-220	MGR	22 1/10W
R91	NRSA02J-220	MGR	22 1/10W
R92	NRSA02J-222	MGR	2.2K 1/10W
R93	NRSA02J-471	MGR	470 1/10W
R94	QVPB613-501	VR	500 QUAD
R95	NRSA02J-222	MGR	2.2K 1/10W
R96	NRSA02J-222	MGR	2.2K 1/10W
R97	NRSA02J-223	MGR	22K 1/10W
R98	NRSA02J-472	MGR	4.7K 1/10W
R99	NRSA02J-682	MGR	6.8K 1/10W
R100	NRSA02J-103	MGR	10K 1/10W
R101	NRSA02J-102	MGR	1.0K 1/10W
R102	NRSA02J-2R2	MGR	2.2 1/10W
R103	NRSA02J-104	MGR	100K 1/10W
R104	NRSA02J-104	MGR	100K 1/10W
R105	NRSA02J-822	MGR	8.2K 1/10W
R106	NRSA02J-472	MGR	4.7K 1/10W
R107	NRSA02J-102	MGR	1.0K 1/10W
R108	NRSA02J-102	MGR	1.0K 1/10W
R109	NRSA02J-102	MGR	1.0K 1/10W
R110	QVPB613-502	VR	5K BURST LEVEL
R111	NRSA02J-392	MGR	3.9K 1/10W
R112	NRSA02J-104	MGR	100K 1/10W
R113	NRSA02J-823	MGR	82K 1/10W
R114	NRSA02J-104	MGR	100K 1/10W
R115	NRSA02J-104	MGR	100K 1/10W
R116	NRSA02J-101	MGR	100 1/10W
R117	NRSA02J-104	MGR	100K 1/10W
R118	NRSA02J-823	MGR	82K 1/10W
R119	NRSA02J-822	MGR	8.2K 1/10W
R120	NRSA02J-223	MGR	22K 1/10W
R121	QVPB613-202	VR	2.0K R-Y GAIN
R122	NRSA02J-332	MGR	3.3K 1/10W
R123	NRSA02J-104	MGR	100K 1/10W
R124	NRSA02J-332	MGR	3.3K 1/10W
R125	NRSA02J-223	MGR	22K 1/10W
R126	NRSA02J-682	MGR	6.8K 1/10W
R127	NRSA02J-222	MGR	2.2K 1/10W
R128	QVPB613-202	VR	2K INT SC FINE
R129	NRSA02J-273	MGR	27K 1/10W
R130	NRSA02J-273	MGR	27K 1/10W
R131	NRSA02J-103	MGR	10K 1/10W
R132	NRSA02J-391	MGR	390 1/10W
R133	NRSA02J-471	MGR	470 1/10W
C1	QER41AM-476	E CAP	47 10V
C2	QER41AM-476	E CAP	47 10V

Symbol No.	Part No.	Part Name	Description
C3	QER41AM-476	E CAP	47 10V
C4	QER40JM-476	E CAP	47 6.3V
C5	QER41AM-476	E CAP	47 10V
C6	QER40JM-476	E CAP	47 6.3V
C7	NCT03CH-560	C CAP	56P 50V
C8	QER41AM-476	E CAP	47 10V
C9	QEPA0JM-476	NP CAP	47 6.3V
C10	QER41EM-106	E CAP	10 25V
C12	QER41AM-476	E CAP	47 10V
C13	NCB21HK-472	C CAP	4700P 50V
C14	NCT03CH-561	C CAP	560P 50V
C15	QEJ41VM-684	T CAP	0.68 35V
C16	QER41AM-476	E CAP	47 10V
C17	NCF21HZ-103	C CAP	0.010 50V
C18	NCF21HZ-103	C CAP	0.010 50V
C19	NCF21EZ-104	C CAP	0.10 25V
C20	QER41EM-106	E CAP	10 25V
C21	QER41AM-476	E CAP	47 10V
C22	NCF21EZ-104	C CAP	0.10 25V
C24	QER40JM-476	E CAP	47 6.3V
C25	QEJ41VM-684	T CAP	0.68 35V
C26	QER40JM-476	E CAP	47 6.3V
C27	NCF21HZ-103	C CAP	0.010 50V
C28	NCF21HZ-103	C CAP	0.010 50V
C29	NCF21EZ-104	C CAP	0.10 25V
C30	NCT03CH-560	C CAP	56P 50V
C31	NCT03CH-101	C CAP	100P 50V
C32	NCT03CH-101	C CAP	100P 50V
C33	NCT03CH-151	C CAP	150P 50V
C34	QER41EM-106	E CAP	10 25V
C35	QER41EM-106	E CAP	10 25V
C36	NCT03CH-151	C CAP	150P 50V
C37	QER40JM-476	E CAP	47 6.3V
C38	QEJ41AM-106	T CAP	10 10V
C39	NCT03CH-220	C CAP	22P 50V
C40	NCF21EZ-104	C CAP	0.10 25V
C41	NCT03CH-820	C CAP	82P 50V
C44	NCF21HZ-103	C CAP	0.010 50V
C45	NCF21HZ-103	C CAP	0.010 50V
C46	QEJ41AM-106	T CAP	10 10V
C47	NCF21HZ-103	C CAP	0.010 50V
C48	NCT03CH-220	C CAP	22P 50V
C49	NCT03CH-101	C CAP	100P 50V
C51	NCT03CH-270	C CAP	27P 50V
C52	NCF21EZ-104	C CAP	0.10 25V
C53	NCF21EZ-104	C CAP	0.10 25V
C54	QER40JM-476	E CAP	47 6.3V
C55	QER41EM-106	E CAP	10 25V
C56	QER41AM-476	E CAP	47 10V
C57	QER40JM-476	E CAP	47 6.3V
C58	NCT03CH-820	C CAP	82P 50V
C59	QER41AM-476	E CAP	47 10V
C60	NCT03CH-3R0	C CAP	3.0P 50V
C61	QEJ41AM-106	T CAP	10 10V
C62	NCT03CH-221	C CAP	220P 50V
C63	NCT03CH-121	C CAP	120P 50V
C64	NCF21HZ-103	C CAP	0.010 50V
C65	QEJ41VM-105	T CAP	1.0 35V
C66	NCT03CH-470	C CAP	47P 50V

Symbol No.	Part No.	Part Name	Description
C67	NCT03CH-5R0	C CAP	5.0P 50V
C68	NCT03CH-5R0	C CAP	5.0P 50V
L1	SCV0331-4R7	PEAKING COIL	4.7μH
L2	SCV0331-100	PEAKING COIL	10μH
L3	SCV0331-220	PEAKING COIL	22μH
L4	SCV0331-220	PEAKING COIL	22μH
L5	SCV0331-820	PEAKING COIL	82μH
L7	SCV1488-121	PEAKING COIL	120μH
CBM1 CBMC2288-E-N0A R-Y(N) CBM			
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-102	MGR	1.0K 1/10W
R2	NRSA02J-182	MGR	1.8K 1/10W
R3	NRSA02J-152	MGR	1.5K 1/10W
R4	NRSA02J-222	MGR	2.2K 1/10W
R6	NRSA02J-182	MGR	1.8K 1/10W
R7	NRSA02J-182	MGR	1.8K 1/10W
R8	NRSA02J-562	MGR	5.6K 1/10W
C1	NCT03CH-121	C CAP	120P 50V
C2	NCT03CH-560	C CAP	56P 50V
CBM2 CBMC2288-F-N0A B-Y(N) CBM			
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-102	MGR	1.0K 1/10W
R2	NRSA02J-182	MGR	1.8K 1/10W
R3	NRSA02J-472	MGR	4.7K 1/10W
R4	NRSA02J-332	MGR	3.3K 1/10W
R5	NRSA02J-682	MGR	6.8K 1/10W
R6	NRSA02J-182	MGR	1.8K 1/10W
R7	NRSA02J-152	MGR	1.5K 1/10W
R8	NRSA02J-562	MGR	5.6K 1/10W
C1	NCT03CH-121	C CAP	120P 50V
C2	NCT03CH-560	C CAP	56P 50V
CBM3 CBMC2288-G-00A SC SHIFT CBM			
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SC2295(B.C)	TRANSISTOR	MATSUSHITA

7.13 ZEBRA BOARD ASSEMBLY 1 3

1 3 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description	
R1	NRSA02J-682	MGR	6.8K	1/10W
R2	NRSA02J-273	MGR	27K	1/10W
R3	NRSA02J-103	MGR	10K	1/10W
R4	NRSA02J-681	MGR	680	1/10W
R5	NRSA02J-681	MGR	680	1/10W
R6	NRSA02J-561	MGR	560	1/10W
R7	NRSA02J-681	MGR	680	1/10W
R8	NRSA02J-681	MGR	680	1/10W
R9	NRSA02J-561	MGR	560	1/10W
R10	NRSA02J-273	MGR	27K	1/10W
R11	NRSA02J-103	MGR	10K	1/10W
R12	NRSA02J-681	MGR	680	1/10W
R13	NRSA02J-471	MGR	470	1/10W
C1	NCF21HZ-103	C CAP	0.010	50V
C2	NCT03CH-220	C CAP	22P	50V
C3	NCF21HZ-103	C CAP	0.010	50V
C4	NCT03CH-101	C CAP	100P	50V
C5	NCT03CH-101	C CAP	100P	50V
C6	NCF21HZ-103	C CAP	0.010	50V
C7	NCT03CH-560	C CAP	56P	50V

Symbol No.	Part No.	Part Name	Description	
IC1	NJM319M	IC	JRC	
IC2	TC4053BF	I.C.(M)	TOSHIBA	
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	
Q3	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	
Q6	DTC124EK	TRANSISTOR	ROHM	
R1	NRSA02J-273	MGR	27K	1/10W
R2	NRSA02J-681	MGR	680	1/10W
R3	NRSA02J-102	MGR	1.0K	1/10W
R4	NRSA02J-123	MGR	12K	1/10W
R5	QVPC404-502	VR	5.0K	
R6	NRSA02J-104	MGR	100K	1/10W
R7	NRSA02J-103	MGR	10K	1/10W
R8	NRSA02J-183	MGR	18K	1/10W
R9	NRSA02J-562	MGR	5.6K	1/10W
R10	NRSA02J-183	MGR	18K	1/10W
R11	NRSA02J-562	MGR	5.6K	1/10W
R12	NRSA02J-103	MGR	10K	1/10W
R13	NRSA02J-183	MGR	18K	1/10W
R14	NRSA02J-332	MGR	3.3K	1/10W
R15	NRSA02J-682	MGR	6.8K	1/10W
R16	NRSA02J-332	MGR	3.3K	1/10W
R17	NRSA02J-472	MGR	4.7K	1/10W
R18	NRSA02J-472	MGR	4.7K	1/10W
R19	NRSA02J-223	MGR	22K	1/10W
C1	NCF21HZ-103	C CAP	0.010	50V
C2	NCF21EZ-104	C CAP	0.10	25V
C3	NCF21EZ-104	C CAP	0.10	25V
C4	NCF21EZ-104	C CAP	0.10	25V

7.14 CP BOARD ASSEMBLY 14

14□□□□□□□

Symbol No.	Part No.	Part Name	Description
IC1	MB89T715PF	I.C.(M)	FUJITSU
IC2	PLSC1054-V1-00	I.C.(M)	JVC (U)
	PLSC1055-V1-00	I.C.(M)	JVC (E)
IC3	MC74HC373FL	I.C.(M)	MOTOROLA
IC4	MC74HC165F	I.C.(M)	MOTOROLA
IC5	MC74HC165F	I.C.(M)	MOTOROLA
IC6	MB88342PF	I.C.(M)	FUJITSU
IC7	M50452-003P	I.C.(M)	MITSUBISHI
IC8	MB89009P-G-106	I.C.(M)	FUJITSU
IC9	S-24H45I01	I.C.(M)	SEIKO
IC10	TC40H004F	IC	TOSHIBA
IC11	TC50H001F	I.C.(M)	TOSHIBA
IC12	TA78L005AP	I.C.(M)	TOSHIBA
IC13	PST529C-2	I.C.(M)	MITSUMI
IC14	RC2902M	I.C.(M)	RAYTHEON
IC15	RC2902M	I.C.(M)	RAYTHEON
IC16	LM2904M	I.C.(M)	TEXAS
IC17	TC7S00F	I.C.(M)	TOSHIBA
Q1	DTC124EK	TRANSISTOR	ROHM
Q2	DTC124EK	TRANSISTOR	ROHM
Q3	DTC124EK	TRANSISTOR	ROHM
Q4	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q5	DTC124EK	TRANSISTOR	ROHM
Q6	DTC124EK	TRANSISTOR	ROHM
Q7	DTC124EK	TRANSISTOR	ROHM
Q8	DTC124EK	TRANSISTOR	ROHM
Q9	DTC124EK	TRANSISTOR	ROHM
Q10	DTC124EK	TRANSISTOR	ROHM
D1	MA152WK	DIODE	MATSUSHITA
D2	MA152WK	DIODE	MATSUSHITA
D3	MA152A	DIODE	MATSUSHITA
D4	MA152WA	DIODE	MATSUSHITA
D5	MA152A	DIODE	MATSUSHITA
D6	MA152A	DIODE	MATSUSHITA
R1	NRSA02J-334	MGR	330K 1/10W
R2	NRSA02J-103	MGR	10K 1/10W
R3	NRSA02J-103	MGR	10K 1/10W
R4	NRSA02J-103	MGR	10K 1/10W
R5	NRSA02J-223	MGR	22K 1/10W
R6	NRSA02J-223	MGR	22K 1/10W
R7	NRSA02J-223	MGR	22K 1/10W
R8	NRSA02J-122	MGR	1.2K 1/10W
R9	NRSA02J-222	MGR	2.2K 1/10W
R10	NRSA02J-223	MGR	22K 1/10W
R11	NRSA02J-103	MGR	10K 1/10W
R12	NRSA02J-103	MGR	10K 1/10W
R13	NRSA02J-103	MGR	10K 1/10W
R14	NRSA02J-101	MGR	100 1/10W
R15	NRSA02J-101	MGR	100 1/10W
R16	NRSA02J-102	MGR	1.0K 1/10W
R17	QVPB614-203	VR	20K B BLK
R18	QVPB614-203	VR	20K B WHT
R19	NRSA02J-103	MGR	10K 1/10W
R20	NRSA02J-473	MGR	47K 1/10W
R21	NRSA02J-472	MGR	4.7K 1/10W
R22	NRSA02J-473	MGR	47K 1/10W
R23	QVPB614-203	VR	20K R BLK
R24	QVPB614-203	VR	20K R WHT
R25	NRSA02J-103	MGR	10K 1/10W
R26	NRSA02J-473	MGR	47K 1/10W
R27	QVPB614-102	VR	1.0K IRIS LEVEL
R28	NRSA02J-182	MGR	1.8K 1/10W
R29	NRSA02J-103	MGR	10K 1/10W
R30	QVPB614-203	VR	20K MASTER BLK
R31	NRSA02J-393	MGR	39K 1/10W
R32	NRSA02J-332	MGR	3.3K 1/10W
R33	QVPB614-202	VR	2.0K 12V DET
R34	NRSA02J-103	MGR	10K 1/10W
R35	NRSA02J-223	MGR	22K 1/10W
R36	NRSA02J-223	MGR	22K 1/10W
R37	NRSA02J-223	MGR	22K 1/10W
R38	NRSA02J-223	MGR	22K 1/10W
R39	NRSA02J-223	MGR	22K 1/10W
R40	NRSA02J-223	MGR	22K 1/10W
R41	NRSA02J-103	MGR	10K 1/10W
R42	NRSA02J-272	MGR	2.7K 1/10W
R43	NRSA02J-104	MGR	100K 1/10W
R44	NRSA02J-104	MGR	100K 1/10W
R45	NRSA02J-223	MGR	22K 1/10W
R46	NRSA02J-223	MGR	22K 1/10W
R47	NRSA02J-223	MGR	22K 1/10W
R48	NRSA02J-472	MGR	4.7K 1/10W
R49	NRSA02J-103	MGR	10K 1/10W
R50	NRSA02J-103	MGR	10K 1/10W
R51	NRSA02J-104	MGR	100K 1/10W
R52	NRSA02J-103	MGR	10K 1/10W
R53	NRSA02J-103	MGR	10K 1/10W
R54	NRSA02J-223	MGR	22K 1/10W
R55	NRSA02J-103	MGR	10K 1/10W
R56	NRSA02J-101	MGR	100 1/10W
R57	NRSA02J-101	MGR	100 1/10W
R58	NRSA02J-103	MGR	10K 1/10W
R59	NRSA02J-103	MGR	10K 1/10W
R60	NRSA02J-101	MGR	100 1/10W
RA1	QRB081K-223	R.NETWORK	22K
RA2	QRB081K-223	R.NETWORK	22K
C1	NCF21EZ-104	C CAP	0.10 25V
C2	NCF21EZ-104	C CAP	0.10 25V
C3	NCF21EZ-104	C CAP	0.10 25V
C4	NCT03CH-221	C CAP	220P 50V
C5	NCF21EZ-104	C CAP	0.10 25V
C6	NCT03CH-151	C CAP	150P 50V
C7	NCF21EZ-104	C CAP	0.10 25V
C8	NCT03CH-330	C CAP	33P 50V
C9	NCT03CH-220	C CAP	22P 50V
C10	NCT03CH-220	C CAP	22P 50V
C11	QER41HM-105	E CAP	1.0 50V
C12	QER41HM-475	E CAP	4.7 50V
C13	QEJ41VM-104	T CAP	0.10 35V
C14	NCF21HZ-103	C CAP	0.010 50V
C15	NCF21HZ-103	C CAP	0.010 50V
C16	NCF21EZ-104	C CAP	0.10 25V
C17	QER41EM-106	E CAP	10 25V
C18	QER41EM-106	E CAP	10 25V

Symbol No.	Part No.	Part Name	Description
C19	NCT03CH-220	C CAP	22P 50V
C20	NCT03CH-220	C CAP	22P 50V
C21	NCF21EZ-104	C CAP	0.10 25V
C22	QEJ41AM-226	T CAP	22 10V
C23	QER41EM-106	E CAP	10 25V
C24	QER41AM-476	E CAP	47 10V
C25	NCF21HZ-103	C CAP	0.010 50V
C26	QER41AM-476	E CAP	47 10V
C27	QER41AM-476	E CAP	47 10V
C28	QER41AM-476	E CAP	47 10V
C29	NCF21EZ-104	C CAP	0.10 25V
C30	NCF21EZ-104	C CAP	0.10 25V
C31	NCF21EZ-104	C CAP	0.10 25V
C32	NCF21EZ-104	C CAP	0.10 25V
C33	NCF21EZ-104	C CAP	0.10 25V
C34	NCF21EZ-104	C CAP	0.10 25V
C35	NCF21EZ-104	C CAP	0.10 25V
C36	NCT03CH-220	C CAP	22P 50V
L1	SMV2223	PEAKING COIL	10μH
L2	SMV2223	PEAKING COIL	10μH
L3	SMV2223	PEAKING COIL	10μH
X1	SCV1492-001	CRYSTAL	7.3728MHz
S1	SCV1311-001	ROTALY SWITCH	PIX SEL SW
S2	SCV1335-002	DIP SWITCH	CC SW/CHK SW
CN1	SCV0501-001	CONNECTOR	30PIN
CN2	SCV0501-001	CONNECTOR	30PIN
CBM1/2/3	**CBMC2288-H-00A**	**AW/AB**	**DET1 CBM**
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SK198(Q.R)	FET	MATSUSHITA
Q3	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SK198(Q.R)	FET	MATSUSHITA
Q5	2SK360	FET	HITACHI
Q6	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-102	MGR	1.0K 1/10W
R2	NRSA02J-152	MGR	1.5K 1/10W
R3	NRSA02J-331	MGR	330 1/10W
R4	NRSA02J-474	MGR	470K 1/10W
R5	NRSA02J-104	MGR	100K 1/10W
R6	NRSA02J-102	MGR	1.0K 1/10W
R7	NRSA02J-474	MGR	470K 1/10W
R8	NRSA02J-104	MGR	100K 1/10W
R9	NRSA02J-154	MGR	150K 1/10W
R10	NRSA02J-102	MGR	1.0K 1/10W
R11	NRSA02J-474	MGR	470K 1/10W
R12	NRSA02J-104	MGR	100K 1/10W

Symbol No.	Part No.	Part Name	Description
C1	NCT03CH-680	C CAP	68P 50V
C2	NCF21EZ-104	C CAP	0.10 25V
C3	NCF21EZ-104	C CAP	0.10 25V
C4	NCF21EZ-104	C CAP	0.10 25V
CBM4	**CBMC2288-P-N0A**	**NAM DET(N)**	**CBM for U version**
IC1	RC062M	I.C.(M)	JRC
Q1	DTC124EK	TRANSISTOR	ROHM
Q2	IMZ2	TRANSISTOR	ROHM
D1	MA152A	DIODE	MATSUSHITA
R1	NRSA02J-103	MGR	10K 1/10W
R2	NRSA02J-153	MGR	15K 1/10W
R3	NRSA02J-103	MGR	10K 1/10W
R4	NRSA02J-822	MGR	8.2K 1/10W
R5	NRSA02J-104	MGR	100K 1/10W
R6	NRSA02J-562	MGR	5.6K 1/10W
R7	NRSA02J-154	MGR	150K 1/10W
R8	NRSA02J-274	MGR	270K 1/10W
R9	NRSA02J-104	MGR	100K 1/10W
R10	NRSA02J-224	MGR	220K 1/10W
R12	NRSA02J-334	MGR	330K 1/10W
R13	NRSA02J-564	MGR	560K 1/10W
R14	NRSA02J-100	MGR	10 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V
C2	NCF21HZ-333	C CAP	0.033 50V
CBM4	**CBMC2288-P-N0A**	**NAM DET(P)**	**CBM for E version**
IC1	RC062M	I.C.(M)	JRC
Q1	DTC124EK	TRANSISTOR	ROHM
Q2	IMZ2	TRANSISTOR	ROHM
D1	MA152A	DIODE	MATSUSHITA
R1	NRSA02J-103	MGR	10K 1/10W
R2	NRSA02J-153	MGR	15K 1/10W
R3	NRSA02J-103	MGR	10K 1/10W
R4	NRSA02J-822	MGR	8.2K 1/10W
R5	NRSA02J-104	MGR	100K 1/10W
R6	NRSA02J-562	MGR	5.6K 1/10W
R7	NRSA02J-184	MGR	180K 1/10W
R8	NRSA02J-334	MGR	330K 1/10W
R9	NRSA02J-124	MGR	120K 1/10W
R10	NRSA02J-224	MGR	220K 1/10W

Symbol No.	Part No.	Part Name	Description
R12	NRSA02J-334	MGR	330K 1/10W
R13	NRSA02J-564	MGR	560K 1/10W
R14	NRSA02J-100	MGR	10 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V
C2	NCF21HZ-333	C CAP	0.033 50V
	CBM5 CBMC2288-K-00A AW/AB DET2 CBM		
IC1	LM2904M	I.C(MONO-ANA)	TEXAS
IC2	LM2904M	I.C(MONO-ANA)	TEXAS
Q1	2SK198(Q.R)	FET	MATSUSHITA
Q2	2SK198(Q.R)	FET	MATSUSHITA
Q3	2SK198(Q.R)	FET	MATSUSHITA
R1	NRSA02J-103	MGR	10K 1/10W
R2	NRSA02J-103	MGR	10K 1/10W
R3	NRSA02J-103	MGR	10K 1/10W
R4	NRSA02J-103	MGR	10K 1/10W
R5	NRSA02J-103	MGR	10K 1/10W
R6	NRSA02J-103	MGR	10K 1/10W
R7	NRSA02J-474	MGR	470K 1/10W
R8	NRSA02J-104	MGR	100K 1/10W
R9	NRSA02J-333	MGR	33K 1/10W
R10	NRSA02J-472	MGR	4.7K 1/10W
R11	NRSA02J-474	MGR	470K 1/10W
R12	NRSA02J-104	MGR	100K 1/10W
R13	NRSA02J-333	MGR	33K 1/10W
R14	NRSA02J-103	MGR	10K 1/10W
R15	NRSA02J-474	MGR	470K 1/10W
R16	NRSA02J-104	MGR	100K 1/10W
R17	NRSA02J-333	MGR	33K 1/10W
R18	NRSA02J-472	MGR	4.7K 1/10W
R19	NRSA02J-333	MGR	33K 1/10W
R20	NRSA02J-123	MGR	12K 1/10W
C1	NCF21EZ-104	C CAP	0.10 25V

7.15 PS BOARD ASSEMBLY 15

15□□□□□□

Symbol No.	Part No.	Part Name	Description
IC1	TA78L008AP	I.C.(M)	TOSHIBA
IC2	CA3130E	I.C.(M)	RCA
IC3	DN819	I.C.(M)	MATSUSHITA
IC4	TC4001BP	I.C(DIGI-MOS)	TOSHIBA
IC5	NJM79L05A	I.C(MONO-ANA)	JRC
Q1	2SC1685(R.S)	TRANSISTOR	MATSUSHITA
Q2	2SC1384(R)	SI.TRANSISTOR	MATSUSHITA
Q3	2SC1685(R.S)	TRANSISTOR	MATSUSHITA
Q4	2SA564(R)	TRANSISTOR	MATSUSHITA
Q5	2SC1685(R.S)	TRANSISTOR	MATSUSHITA
Q6	2SA564(R)	TRANSISTOR	MATSUSHITA
Q7	2SD1348(S.T)	SI.TRANSISTOR	SANYO
Q8	2SD1348(S.T)	SI.TRANSISTOR	SANYO
D1	MA165	DIODE	MATSUSHITA
D2	MA165	DIODE	MATSUSHITA
D3	ERA82-004V3	SI.DIODE	FUJI ELECTRIC
D4	ERA82-004V3	SI.DIODE	FUJI ELECTRIC
D5	ERA82-004V3	SI.DIODE	FUJI ELECTRIC
D6	ERA82-004V3	SI.DIODE	FUJI ELECTRIC
D7	HZ3BLL	ZENER DIODE	HITACHI
D8	HZ6B1L	ZENER DIODE	HITACHI
D9	MA165	DIODE	MATSUSHITA
D10	MA165	DIODE	MATSUSHITA
D11	HZ6B1L	ZENER DIODE	HITACHI
R1	QRD161J-822	CR	8.2K 1/6W
R2	QRD161J-472	CR	4.7K 1/6W
R3	QRD161J-682	CR	6.8K 1/6W
R4	QRD161J-181	CR	180 1/6W
R5	QRD161J-122	CR	1.2K 1/6W
R6	QVPB614-102	VR	1.0K +9V ADJ
R7	QRD161J-682	CR	6.8K 1/6W
R8	QRD161J-471	CR	470 1/6W
R9	QRD161J-471	CR	470 1/6W
R10	QRD161J-152	CR	1.5K 1/6W
R11	QRD161J-103	CR	10K 1/6W
R12	QRD161J-471	CR	470 1/6W
R13	QRD161J-471	CR	470 1/6W
R14	QRD161J-100	CR	10 1/6W
C1	QER41EM-106	E CAP	10 25V
C2	QER41EM-106	E CAP	10 25V
C3	QER41HM-475	E CAP	4.7 50V
C4	QCS11HJ-470	C CAP	47P 50V
C5	QER41HM-105	E CAP	1.0 50V
C6	QETA1AM-227	E CAP	220 10V
C7	QETA1AM-227	E CAP	220 10V
C8	QER41EM-106	E CAP	10 25V
C9	QER41EM-106	E CAP	10 25V
C10	QETA1AM-227	E CAP	220 10V
C11	QETA1AM-227	E CAP	220 10V
C12	QETA1EM-477	E CAP	470 25V
C13	QETA1EM-227	E CAP	220 25V
C14	QETA1AM-477	E CAP	470 10V
C15	QER41EM-106	E CAP	10 25V
C16	QFN41HJ-103	MY CAP	0.010 50V

Symbol No.	Part No.	Part Name	Description
L1	SCV0983-500	PEAKING COIL	50μH
L2	SCV0983-500	PEAKING COIL	50μH
CN16	SCV1227-011	CONNECTOR	2PIN
CN18	SCV1227-003	CONNECTOR	3PIN
TP1	SCV1201-001	TEST POINT	JVC
TP2	SCV1201-001	TEST POINT	JVC
12	SCV1227-002	CONNECTOR	JVC
T1	SCV1312-002	DRIVE TRANSF.	

7.16 AU BOARD ASSEMBLY 16

16□□□□□□

Symbol No.	Part No.	Part Name	Description	
IC1	RC2068MD	I.C.(M)	RAYTHEON	
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	
D1	MA152A	DIODE	MATSUSHITA	
D2	MA153	DIODE	MATSUSHITA	
D3	MA153	DIODE	MATSUSHITA	
R1	NRSA02J-473	MGR	47K	1/10W
R2	NRSA02J-473	MGR	47K	1/10W
R3	NRSA02J-102	MGR	1.0K	1/10W
R4	NRSA02J-100	MGR	10	1/10W
R5	NRSA02J-681	MGR	680	1/10W
R6	NRSA02J-682	MGR	6.8K	1/10W
R7	NRSA02J-560	MGR	56	1/10W
R8	NRSA02J-681	MGR	680	1/10W
R9	NRSA02J-682	MGR	6.8K	1/10W
R10	NRSA02J-560	MGR	56	1/10W
R11	NRSA02J-472	MGR	4.7K	1/10W
R12	NRSA02J-472	MGR	4.7K	1/10W
R13	NRSA02J-101	MGR	100	1/10W
R14	NRSA02J-102	MGR	1.0K	1/10W
R15	NRSA02J-101	MGR	100	1/10W
R16	NRSA02J-102	MGR	1.0K	1/10W

Symbol No.	Part No.	Part Name	Description	
R17	NRSA02J-103	MGR	10K	1/10W
R18	NRSA02J-103	MGR	10K	1/10W
R19	NRSA02J-0R0	MGR	0	1/10W
R20	NRSA02J-220	MGR	22	1/10W
R21	QRZ0052-100	FUSI.RESISTOR	10	1/4W
C1	QER41AM-476	E CAP	47	10V
C2	NCF21EZ-104	C CAP	0.10	25V
C3	QER41AM-476	E CAP	47	10V
C4	NCT03CH-331	C CAP	330P	50V
C5	QER41EM-106	E CAP	10	25V
C6	NCB21HK-222	C CAP	2200P	50V
C7	QEJ41AM-106	T CAP	10	10V
C8	NCT03CH-331	C CAP	330P	50V
C9	QER41EM-106	E CAP	10	25V
C10	QER40JM-476	E CAP	47	6.3V
C11	NCB21HK-222	C CAP	2200P	50V
C12	QEJ41AM-106	T CAP	10	10V
C13	QER41AM-476	E CAP	47	10V
LC1	EXC-EMT271BC	EMI FILTER	MURATA	
CN19	SCV1227-007	CONNECTOR	7PIN	
CN24	SCV1227-002	CONNECTOR	JVC	
CN25	SCV1227-005	CONNECTOR	5PIN	
CN28	SCV1227-006	CONNECTOR	JVC	
CN29	SCV1227-003	CONNECTOR	3PIN	

7.17 MT BOARD ASSEMBLY 17

17☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	TA78L005AP	I.C.(M)	TOSHIBA
IC2	RC4556D	I.C.(M)	RAYTHEON
Q1	DTA124ES	TRANSISTOR	ROHM
Q2	DTA124ES	TRANSISTOR	ROHM
Q3	2SC1685(R.S)	TRANSISTOR	MATSUSHITA
Q4	2SC1685(R.S)	TRANSISTOR	MATSUSHITA
Q5	DTA124ES	TRANSISTOR	ROHM
Q6	DTC124ES	DTL.TRANSISTOR	ROHM
Q7	DTC124ES	DTL.TRANSISTOR	ROHM
D1	MA165	DIODE	MATSUSHITA
D2	MA165	DIODE	MATSUSHITA
D3	MA165	DIODE	MATSUSHITA
D4	MA165	DIODE	MATSUSHITA
R1	QRD161J-103	CR	10K 1/6W
R2	QRD161J-152	CR	1.5K 1/6W
R3	QRD161J-472	CR	4.7K 1/6W
R4	QRD161J-561	CR	560 1/6W
R5	QRD161J-101	CR	100 1/6W
R6	QRD161J-101	CR	100 1/6W
R7	QRD161J-332	CR	3.3K 1/6W
R8	QRD161J-183	CR	18K 1/6W
R9	QRD161J-223	CR	22K 1/6W
R10	QRD161J-102	CR	1.0K 1/6W
R11	QRD161J-102	CR	1.0K 1/6W
R12	QRD161J-562	CR	5.6K 1/6W
R13	QRD161J-750	CR	75 1/6W
R14	QRD161J-472	CR	4.7K 1/6W
R15	QRD161J-562	CR	5.6K 1/6W
R16	QRD161J-223	CR	22K 1/6W
R17	QRD161J-332	CR	3.3K 1/6W
R18	QRD161J-103	CR	10K 1/6W
C1	QER41CM-476	E CAP	47 16V
C2	QEJ41AM-106	T CAP	10 10V
C3	QER40JM-476	E CAP	47 6.3V
C4	QFN41HJ-102	MY CAP	1000P 50V
C5	QER41CM-476	E CAP	47 16V
C6	QER40JM-476	E CAP	47 6.3V
C7	QEJ41AM-106	T CAP	10 10V
C8	QER40JM-476	E CAP	47 6.3V
SW1	SSV0997-2100	DIP SWITCH	FRAME/FIELD
CN1	SCV0500-001	CONNECTOR	30PIN CP
CN2	SCV0500-001	CONNECTOR	30PIN CP
CN3	SCV0500-001	CONNECTOR	30PIN SE
CN4	SCV0500-001	CONNECTOR	30PIN PR2
CN5	SCV0500-001	CONNECTOR	30PIN PR1
CN11	SCV1319-15P	CONNECTOR	15PIN
CN21	SCV1227-013	CONNECTOR	12PIN
CN22	SCV1228-013	CONNECTOR	13PIN
CN23	SCV1227-006	CONNECTOR	6PIN
CN26	SCV1227-004	CONNECTOR	4PIN
CN27	SCV1251-50S	CONNECTOR	50PIN
CN30	SCV1227-003	CONNECTOR	3PIN
CN31	SCV1227-010	CONNECTOR	10PIN

7.12 SE(PAL) BOARD ASSEMBLY 1 2
for E version 1 2 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC4	TC4053BF	I.C.(M)	TOSHIBA
IC5	TC4053BF	I.C.(M)	TOSHIBA
IC7	TC40H004F	IC	TOSHIBA
IC8	TC50H000F	IC	TOSHIBA
IC9	TC40H000F	IC	TOSHIBA
IC10	TC4053BF	I.C.(M)	TOSHIBA
Q1	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q4	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q5	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q6	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q7	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q8	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q9	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q10	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q11	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q12	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q13	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q14	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q15	DTC124EK	TRANSISTOR	ROHM
Q16	2SC2406(S.T)	TRANSISTOR	MATSUSHITA
Q17	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q18	DTA124EK	TRANSISTOR	ROHM
Q19	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q20	2SK198(Q.R)	FET	MATSUSHITA
Q21	2SD602(Q.R)	TRANSISTOR	MATSUSHITA
Q22	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q24	2SK198(Q.R)	FET	MATSUSHITA
Q25	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q26	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q27	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q28	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q29	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q30	2SK198(Q.R)	FET	MATSUSHITA
Q31	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q32	DTC124EK	TRANSISTOR	ROHM
Q33	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q34	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q35	2SB710(Q.R)	TRANSISTOR	MATSUSHITA
Q36	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
Q37	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q38	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
D1	MA152A	DIODE	MATSUSHITA
D2	MA152A	DIODE	MATSUSHITA
D4	MA153	DIODE	MATSUSHITA
D6	MA152A	DIODE	MATSUSHITA
R1	QVPB613-202	VR	2.0K R-Y GAIN
R2	NRSA02J-222	MGR	2.2K 1/10W
R3	NRSA02J-222	MGR	2.2K 1/10W
R4	NRSA02J-152	MGR	1.5K 1/10W
R5	NRSA02J-222	MGR	2.2K 1/10W
R6	QVPB613-202	VR	2.0K B-Y GAIN
R7	NRSA02J-332	MGR	3.3K 1/10W
R8	NRSA02J-272	MGR	2.7K 1/10W
R9	NRSA02J-182	MGR	1.8K 1/10W

Symbol No.	Part No.	Part Name	Description
R10	NRSA02J-222	MGR	2.2K 1/10W
R11	NRSA02J-152	MGR	1.5K 1/10W
R12	NRSA02J-332	MGR	3.3K 1/10W
R13	NRSA02J-561	MGR	560 1/10W
R14	NRSA02J-123	MGR	12K 1/10W
R15	NRSA02J-472	MGR	4.7K 1/10W
R16	QVPB614-502	VR	5.0K SYNC LEVEL
R17	NRSA02J-681	MGR	680 1/10W
R18	QVPB614-501	VR	500 Y LEVEL
R19	NRSA02J-681	MGR	680 1/10W
R20	NRSA02J-223	MGR	22K 1/10W
R21	NRSA02J-123	MGR	12K 1/10W
R22	NRSA02J-471	MGR	470 1/10W
R23	NRSA02J-101	MGR	100 1/10W
R24	NRSA02J-101	MGR	100 1/10W
R25	NRSA02J-151	MGR	150 1/10W
R26	QVPB613-202	VR	2.0K Y1 LEVEL
R27	NRSA02J-681	MGR	680 1/10W
R28	NRSA02J-102	MGR	1.0K 1/10W
R29	NRSA02J-102	MGR	1.0K 1/10W
R30	NRSA02J-102	MGR	1.0K 1/10W
R31	NRSA02J-102	MGR	1.0K 1/10W
R32	NRSA02J-182	MGR	1.8K 1/10W
R33	NRSA02J-153	MGR	15K 1/10W
R34	NRSA02J-243	MGR	24K 1/10W
R35	QVPB613-202	VR	2.0K Y2 LEVEL
R36	NRSA02J-182	MGR	1.8K 1/10W
R37	NRSA02J-681	MGR	680 1/10W
R38	NRSA02J-392	MGR	3.9K 1/10W
R39	NRSA02J-393	MGR	39K 1/10W
R40	NRSA02J-123	MGR	12K 1/10W
R41	NRSA02J-822	MGR	8.2K 1/10W
R42	NRSA02J-822	MGR	8.2K 1/10W
R43	NRSA02J-104	MGR	100K 1/10W
R44	NRSA02J-332	MGR	3.3K 1/10W
R45	NRSA02J-332	MGR	3.3K 1/10W
R46	NRSA02J-102	MGR	1.0K 1/10W
R47	NRSA02J-332	MGR	3.3K 1/10W
R48	NRSA02J-222	MGR	2.2K 1/10W
R49	NRSA02J-122	MGR	1.2K 1/10W
R50	NRSA02J-101	MGR	100 1/10W
R51	NRSA02J-332	MGR	3.3K 1/10W
R52	NRSA02J-102	MGR	1.0K 1/10W
R53	NRSA02J-122	MGR	1.2K 1/10W
R54	NRSA02J-122	MGR	1.2K 1/10W
R55	NRSA02J-681	MGR	680 1/10W
R56	NRSA02J-103	MGR	10K 1/10W
R57	NRSA02J-153	MGR	15K 1/10W
R58	QVPB613-202	VR	2.0K R-Y GAIN
R59	NRSA02J-105	MGR	1.0M 1/10W
R60	NRSA02J-223	MGR	22K 1/10W
R61	NRSA02J-101	MGR	100 1/10W
R62	NRSA02J-2R2	MGR	2.2 1/10W
R63	NRSA02J-2R2	MGR	2.2 1/10W
R64	NRSA02J-2R2	MGR	2.2 1/10W
R65	NRSA02J-560	MGR	56 1/10W
R66	NRSA02J-562	MGR	5.6K 1/10W
R67	NRSA02J-122	MGR	1.2K 1/10W
R68	NRSA02J-472	MGR	4.7K 1/10W

[SE(PAL)]

Symbol No.	Part No.	Part Name	Description
R69	QVPB613-103	VR	10K BURST PHASE
R70	NRSA02J-123	MGR	12K 1/10W
R71	NRSA02J-392	MGR	3.9K 1/10W
R72	NRSA02J-105	MGR	1.0M 1/10W
R73	NRSA02J-223	MGR	22K 1/10W
R74	NRSA02J-102	MGR	1.0K 1/10W
R75	NRSA02J-102	MGR	1.0K 1/10W
R76	QVPB614-501	VR	500 CHROMA
R77	NRSA02J-561	MGR	560 1/10W
R78	NRSA02J-123	MGR	12K 1/10W
R79	NRSA02J-153	MGR	15K 1/10W
R80	NRSA02J-101	MGR	100 1/10W
R81	QVPB613-202	VR	2.0K CHROMA OUT
R82	NRSA02J-102	MGR	1.0K 1/10W
R83	NRSA02J-392	MGR	3.9K 1/10W
R84	NRSA02J-220	MGR	22 1/10W
R85	NRSA02J-220	MGR	22 1/10W
R86	NRSA02J-222	MGR	2.2K 1/10W
R87	QVPB614-102	VR	1.0K B-Y C.BAL
R88	QVPB614-102	VR	1.0K R-Y C.BAL
R89	QVPB614-102	VR	1.0K R-Y C.BAL
R90	NRSA02J-681	MGR	680 1/10W
R91	NRSA02J-681	MGR	680 1/10W
R92	NRSA02J-103	MGR	10K 1/10W
R93	NRSA02J-223	MGR	22K 1/10W
R94	NRSA02J-102	MGR	1.0K 1/10W
R95	NRSA02J-822	MGR	8.2K 1/10W
R96	NRSA02J-471	MGR	470 1/10W
R97	QVPB613-501	VR	500 QUAD
R98	NRSA02J-102	MGR	1.0K 1/10W
R99	NRSA02J-222	MGR	2.2K 1/10W
R100	NRSA02J-223	MGR	22K 1/10W
R101	NRSA02J-472	MGR	4.7K 1/10W
R102	NRSA02J-682	MGR	6.8K 1/10W
R103	NRSA02J-103	MGR	10K 1/10W
R104	NRSA02J-104	MGR	100K 1/10W
R105	NRSA02J-223	MGR	22K 1/10W
R106	NRSA02J-104	MGR	100K 1/10W
R107	NRSA02J-104	MGR	100K 1/10W
R108	NRSA02J-103	MGR	10K 1/10W
R109	NRSA02J-103	MGR	10K 1/10W
R110	NRSA02J-472	MGR	4.7K 1/10W
R111	NRSA02J-332	MGR	3.3K 1/10W
R112	NRSA02J-102	MGR	1.0K 1/10W
R113	NRSA02J-102	MGR	1.0K 1/10W
R114	NRSA02J-392	MGR	3.9K 1/10W
R115	NRSA02J-103	MGR	10K 1/10W
R116	NRSA02J-104	MGR	100K 1/10W
R117	NRSA02J-104	MGR	100K 1/10W
R118	NRSA02J-104	MGR	100K 1/10W
R119	NRSA02J-823	MGR	82K 1/10W
R120	NRSA02J-682	MGR	6.8K 1/10W
R121	NRSA02J-222	MGR	2.2K 1/10W
R122	NRSA02J-104	MGR	100K 1/10W
R123	NRSA02J-823	MGR	82K 1/10W
R124	NRSA02J-823	MGR	82K 1/10W
R125	NRSA02J-103	MGR	10K 1/10W
R126	NRSA02J-182	MGR	1.8K 1/10W
R127	NRSA02J-332	MGR	3.3K 1/10W

Symbol No.	Part No.	Part Name	Description
R128	NRSA02J-102	MGR	1.0K 1/10W
R129	NRSA02J-272	MGR	2.7K 1/10W
R130	NRSA02J-103	MGR	10K 1/10W
R131	NRSA02J-562	MGR	5.6K 1/10W
R132	NRSA02J-272	MGR	2.7K 1/10W
R133	NRSA02J-472	MGR	4.7K 1/10W
R134	NRSA02J-472	MGR	4.7K 1/10W
R135	NRSA02J-333	MGR	33K 1/10W
R136	NRSA02J-472	MGR	4.7K 1/10W
R137	QVPB613-502	VR	5K BURST LEVEL
R138	NRSA02J-223	MGR	22K 1/10W
R139	NRSA02J-223	MGR	22K 1/10W
R140	NRSA02J-223	MGR	22K 1/10W
R141	NRSA02J-103	MGR	10K 1/10W
R142	NRSA02J-472	MGR	4.7K 1/10W
R143	NRSA02J-392	MGR	3.9K 1/10W
R144	NRSA02J-392	MGR	3.9K 1/10W
R145	NRSA02J-472	MGR	4.7K 1/10W
R146	NRSA02J-472	MGR	4.7K 1/10W
R147	NRSA02J-562	MGR	5.6K 1/10W
C1	QER41AM-476	E CAP	47 10V
C2	NCT03CH-560	C CAP	56P 50V
C4	NCF21EZ-104	C CAP	0.10 25V
C5	QER41AM-476	E CAP	47 10V
C6	QER40JM-476	E CAP	47 6.3V
C7	NCF21EZ-104	C CAP	0.10 25V
C8	QER40JM-476	E CAP	47 6.3V
C9	QER41AM-476	E CAP	47 10V
C10	QEPA0JM-476	NP CAP	47 6.3V
C11	QER41EM-106	E CAP	10 25V
C12	QER41EM-106	E CAP	10 25V
C13	QER41AM-476	E CAP	47 10V
C15	QER41AM-476	E CAP	47 10V
C16	QEJ41VM-684	T CAP	0.68 35V
C18	NCF21HZ-103	C CAP	0.010 50V
C19	NCF21EZ-104	C CAP	0.10 25V
C20	NCF21EZ-104	C CAP	0.10 25V
C21	QER41AM-476	E CAP	47 10V
C22	NCB21HK-272	C CAP	2700P 50V
C23	NCT03CH-561	C CAP	560P 50V
C24	QER40JM-476	E CAP	47 6.3V
C25	QEJ41VM-684	T CAP	0.68 35V
C27	QER40JM-476	E CAP	47 6.3V
C28	NCF21HZ-103	C CAP	0.010 50V
C29	NCF21HZ-103	C CAP	0.010 50V
C30	NCF21EZ-104	C CAP	0.10 25V
C31	NCT03CH-390	C CAP	39P 50V
C32	NCT03CH-330	C CAP	33P 50V
C33	NCT03CH-180	C CAP	18P 50V
C34	NCT03CH-121	C CAP	120P 50V
C35	QER41EM-106	E CAP	10 25V
C36	QER41EM-106	E CAP	10 25V
C37	NCT03CH-101	C CAP	100P 50V
C38	NCF21HZ-103	C CAP	0.010 50V
C39	QER41EM-106	E CAP	10 25V
C40	NCF21EZ-104	C CAP	0.10 25V
C41	NCT03CH-121	C CAP	120P 50V
C42	QER40JM-476	E CAP	47 6.3V

Symbol No.	Part No.	Part Name	Description	
C43	QEJ41AM-106	T CAP	10	10V
C44	QEJ41AM-475	T CAP	4.7	10V
C45	QEJ41AM-106	T CAP	10	10V
C46	NCF21HZ-103	C CAP	0.010	50V
C47	NCF21EZ-104	C CAP	0.10	25V
C48	NCT03CH-560	C CAP	56P	50V
C51	NCF21HZ-103	C CAP	0.010	50V
C52	NCF21EZ-104	C CAP	0.10	25V
C53	NCT03CH-331	C CAP	330P	50V
C55	NCT03CH-101	C CAP	100P	50V
C56	NCT03CH-221	C CAP	220P	50V
C57	NCT03CH-121	C CAP	120P	50V
C58	NCF21EZ-104	C CAP	0.10	25V
C59	NCT03CH-220	C CAP	22P	50V
C60	NCS21HJ-102	C CAP	1000P	50V
C61	NCT03CH-101	C CAP	100P	50V
C62	NCT03CH-330	C CAP	33P	50V
C63	QER40JM-476	E CAP	47	6.3V
C64	NCF21HZ-103	C CAP	0.010	50V
C65	NCF21HZ-103	C CAP	0.010	50V
C66	QER40JM-476	E CAP	47	6.3V
C67	NCF21HZ-103	C CAP	0.010	50V
C68	QER40JM-476	E CAP	47	6.3V
C69	NCF21HZ-103	C CAP	0.010	50V
C70	QER41AM-476	E CAP	47	10V
C72	NCS21HJ-102	C CAP	1000P	50V
C73	NCF21EZ-104	C CAP	0.10	25V
C74	NCT03CH-101	C CAP	100P	50V
C75	NCT03CH-470	C CAP	47P	50V
C76	NCF21EZ-104	C CAP	0.10	25V
L1	SCV0331-4R7	PEAKING COIL	4.7μH	
L2	SCV0331-100	PEAKING COIL	10μH	
L3	SCV0331-390	PEAKING COIL	39μH	
L4	SCV0331-220	PEAKING COIL	22μH	

CBM1 CBMC2288-E-P0A R-Y(P) CBM

Symbol No.	Part No.	Part Name	Description	
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	
Q2	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	
R1	NRSA02J-102	MGR	1.0K	1/10W
R2	NRSA02J-182	MGR	1.8K	1/10W
R3	NRSA02J-152	MGR	1.5K	1/10W
R4	NRSA02J-272	MGR	2.7K	1/10W
R5	NRSA02J-682	MGR	6.8K	1/10W
R6	NRSA02J-102	MGR	1.0K	1/10W
R7	NRSA02J-122	MGR	1.2K	1/10W
R8	NRSA02J-562	MGR	5.6K	1/10W
C1	NCT03CH-121	C CAP	120P	50V
C2	NCT03CH-560	C CAP	56P	50V

CBM2 CBMC2288-F-P0A B-Y(P) CBM

Symbol No.	Part No.	Part Name	Description	
Q1	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	
Q2	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	
Q3	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	
R1	NRSA02J-102	MGR	1.0K	1/10W
R2	NRSA02J-182	MGR	1.8K	1/10W
R3	NRSA02J-472	MGR	4.7K	1/10W
R4	NRSA02J-562	MGR	5.6K	1/10W
R5	NRSA02J-682	MGR	6.8K	1/10W
R6	NRSA02J-182	MGR	1.8K	1/10W
R7	NRSA02J-152	MGR	1.5K	1/10W
R8	NRSA02J-562	MGR	5.6K	1/10W
C1	NCT03CH-121	C CAP	120P	50V
C2	NCT03CH-560	C CAP	56P	50V

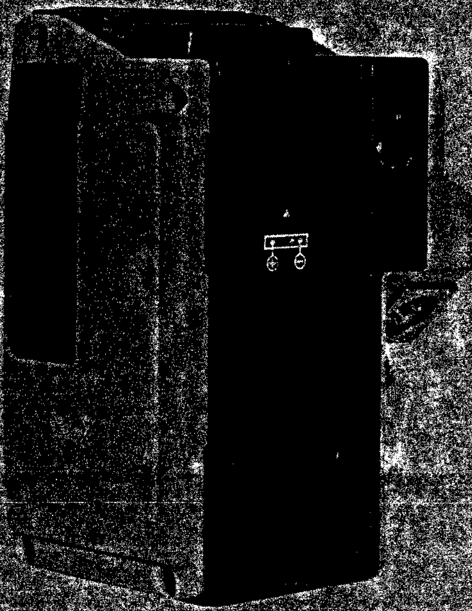
CBM3 CBMC2288-L-00A OFF SET CBM

Symbol No.	Part No.	Part Name	Description	
IC1	RC4558M	I.C.(M)	RAYTHEON	
Q1	2SA1022(B.C)	TRANSISTOR	MATSUSHITA	
Q2	2SC2295(B.C)	TRANSISTOR	MATSUSHITA	
Q3	2SC1621(B34)	TRANSISTOR	NEC	
Q4	2SA1462Y3Y4	TRANSISTOR	NEC	
R1	NRSA02J-223	MGR	22K	1/10W
R2	NRSA02J-103	MGR	10K	1/10W
R3	NRSA02J-103	MGR	10K	1/10W
R4	NRSA02J-683	MGR	68K	1/10W
R5	NRSA02J-103	MGR	10K	1/10W
R6	NRSA02J-472	MGR	4.7K	1/10W
R7	NRSA02J-392	MGR	3.9K	1/10W
R8	NRSA02J-471	MGR	470	1/10W
R9	NRSA02J-471	MGR	470	1/10W
R10	NRSA02J-274	MGR	270K	1/10W
R11	NRSA02J-473	MGR	47K	1/10W
R12	NRSA02J-222	MGR	2.2K	1/10W
R13	NRSA02J-154	MGR	150K	1/10W
R14	NRSA02J-184	MGR	180K	1/10W
R15	NRSA02J-274	MGR	270K	1/10W
R16	NRSA02J-184	MGR	180K	1/10W
R17	NRSA02J-224	MGR	220K	1/10W
R18	NRSA02J-184	MGR	180K	1/10W
R19	NRSA02J-224	MGR	220K	1/10W
C1	NCT03CH-470	C CAP	47P	50V
C2	NCT03CH-150	C CAP	15P	50V
C3	NCF21EZ-104	C CAP	0.10	25V
C4	NCB21HK-333	C CAP	0.033	50V
C5	NCB21HK-333	C CAP	0.033	50V
C6	NCF21HZ-333	C CAP	0.033	50V
C7	NCF21EZ-104	C CAP	0.10	25V
C8	NCF21EZ-104	C CAP	0.10	25V

Symbol No.	Part No.	Part Name	Description
	CBM4 CBMC2288-M-00A	**LIMITTER CBM**	
IC1	RC4558M	I.C.(M)	RAYTHEON
IC2	RC4558M	I.C.(M)	RAYTHEON
Q1	2SA1022(B.C)	TRANSISTOR	MATSUSHITA
Q2	2SK198(Q.R)	FET	MATSUSHITA
Q3	2SC2295(B.C)	TRANSISTOR	MATSUSHITA
D1	HSM276S	DIODE	HITACHI
D2	HSM276S	DIODE	HITACHI
R1	NRSA02J-102	MGR	1.0K 1/10W
R2	NRSA02J-102	MGR	1.0K 1/10W
R3	NRSA02J-682	MGR	6.8K 1/10W
R4	NRSA02J-682	MGR	6.8K 1/10W
R5	NRSA02J-332	MGR	3.3K 1/10W
R6	NRSA02J-472	MGR	4.7K 1/10W
R7	NRSA02J-823	MGR	82K 1/10W
R8	NRSA02J-185	MGR	1.8M 1/10W
R9	NRSA02J-683	MGR	68K 1/10W
R10	NRSA02J-222	MGR	2.2K 1/10W
R11	NRSA02J-103	MGR	10K 1/10W
R12	NRSA02J-103	MGR	10K 1/10W
R13	NRSA02J-471	MGR	470 1/10W
R14	NRSA02J-471	MGR	470 1/10W
R15	NRSA02J-223	MGR	22K 1/10W
R16	NRSA02J-223	MGR	22K 1/10W
R17	NRSA02J-123	MGR	12K 1/10W
R18	NRSA02J-224	MGR	220K 1/10W
C1	NCF21HZ-103	C CAP	0.010 50V
C2	NCF21HZ-103	C CAP	0.010 50V
C3	NCF21HZ-103	C CAP	0.010 50V
C4	NCS21HJ-102	C CAP	1000P 50V
C5	NCF21HZ-103	C CAP	0.010 50V
C6	NCS21HJ-102	C CAP	1000P 50V
C7	NCF21EZ-104	C CAP	0.10 25V
C8	NCF21EZ-104	C CAP	0.10 25V
C9	NCB21HK-333	C CAP	0.033 50V

No. 60056

JVC Service Manual



CAMERA ADAPTER (KA-20)

TABLE OF CONTENTS

Section	Title	Page
1.	CIRCUIT DESCRIPTION	1 - 1
2.	DISASSEMBLY (See the section 2 of KY-17FIT)	2 - 1
3.	ADJUSTMENT PROCEDURE (See the section 3 of KY-17FIT)	3 - 1
4.	REPACKING	4 - 1
5.	EXPLODED VIEW AND PARTS LIST	5 - 1
6.	CHARTS AND DIAGRAMS	6 - 1
7.	ELECTRICAL PARTS LIST	7 - 1

COPYRIGHT © 1991 VICTOR COMPANY OF JAPAN, LTD.

Printed in Japan

SECTION 1
CIRCUIT DESCRIPTION

1.1 VP BOARD

This is the circuit which receives the video signal from the KY-17FIT camera head and sends all the necessary signals to the VTR or Remote control unit.

The power (+9 V DC) necessary for the video processing system is supplied from the camera head via the 50-pin interface connector.

R/G/B and R-Y/Y1(Y2)/B-Y signals supplied from the camera head enter CBM1, while chroma signal for the S-VHS mode directly enters IC1-A.

These signals input to CBM1 and IC1-A are further sent to S1 and S3 (CT board) which siwtch coming signals on and off according to their setting positions for video signal output through the VTR connector.

Relation between setting positions of S1 and S3 and output signals is shown in the following table.

Special care is necessary for use in the VTR or RM mode (MODE switch).

If Y/C switch on the VP board is set to "ON", component signals R-Y/Y/B-Y or R/G/B are not output.

IC2 and IC3 comprise an input/output driver which handles the control data between the camera head and the remote control unit when the RM-P200 is connected.

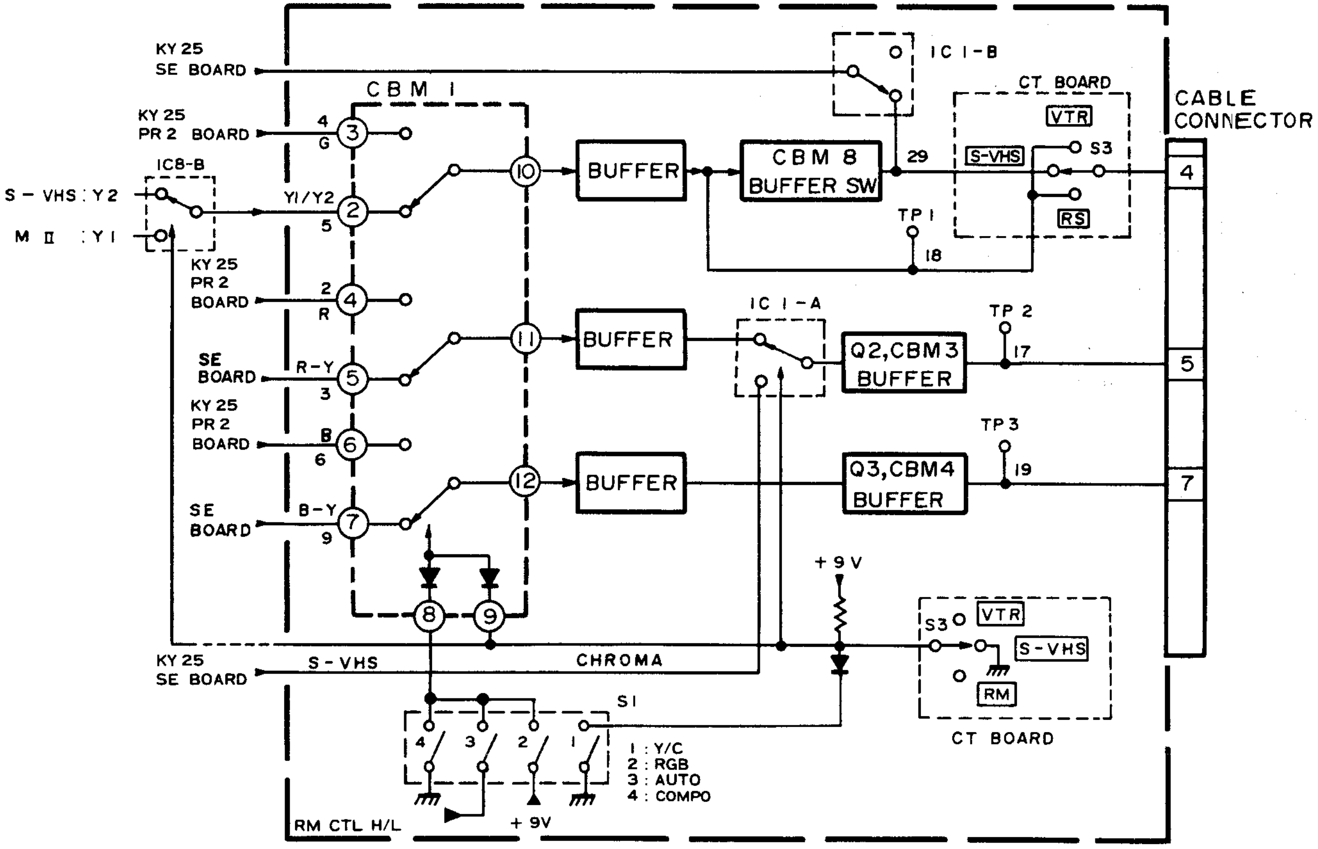
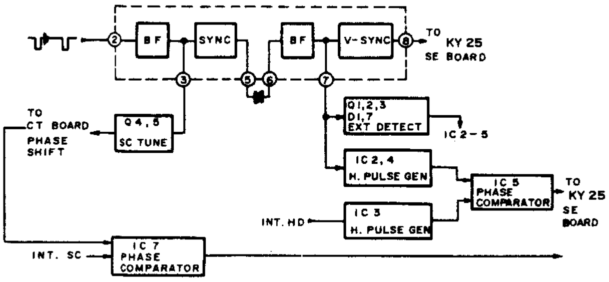

KY 25 SE BOARD
KY 25 PR 2 BOARD
IC8-B
S - VHS : Y2
M II : Y1
CBM 1
4 G
Y1/Y2
5
KY 25 PR 2 BOARD
2 R
SE BOARD
R-Y
3
KY 25 PR 2 BOARD
B
6
SE BOARD
B-Y
9
③ ② ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫
BUFFER
BUFFER
BUFFER
CBM 8 BUFFER SW
29
TP 1
18
IC 1-B
CT BOARD
VTR
S-VHS
S3
RS
CABLE CONNECTOR
4
5
7
IC 1-A
Q2,CBM3 BUFFER
TP 2
17
Q3,CBM4 BUFFER
TP 3
19
+ 9 V
KY 25 SE BOARD
S - VHS
CHROMA
S3
VTR
S-VHS
RM
CT BOARD
S1
4 3 2 1
1 : Y/C
2 : RGB
3 : AUTO
4 : COMPO
RM CTL H/L
+ 9V

Fig. 1-1 VP board video lines

1.2 GL BOARD

This is the circuit which locks the KY-17FIT camera head to an external sync signal.
CBM-1 is a sync signal separator. As the external reference signal, a black burst signal is necessary.



②
BF
SYNC
BF
V-SYNC
⑧
TO KY 25 SE BOARD
③
⑤
⑥
⑦
TO CT BOARD PHASE SHIFT
Q4,5 SC TUNE
Q1,2,3 D1,7 EXT DETECT
IC 2-5
IC 2,4 H. PULSE GEN
IC 5 PHASE COMPARATOR
TO KY 25 SE BOARD
INT. HD
IC 3 H. PULSE GEN
INT. SC
IC 7 PHASE COMPARATOR

Fig. 1-2 GL board

The burst subcarrier is separated from the black burst by Q4 and Q5, and its phase is adjusted by the CT board. The subcarrier is fed back to the GL board and, at IC7, phase-compared with the subcarrier generated by the SSG in the camera head. The resulting error signal controls the SSG in the camera head.
The H sync is output via pin 7 of CBM-1 and shaped into H sync pulses by IC2 and IC4. The HD pulse generated by the SSG in the camera head is also shaped by IC3.
IC5 compares the phases of these two H sync signals. The resulting error signal controls the oscillation frequency of the H-clock oscillator on the SE board in the camera head.
The presence of external sync signals is detected by D1 and D7, and Q1, Q2 and Q3. When an external sync signal is detected, signals are applied via Q3 to ICs 1, 2, 3, 4, 5 and IC7, and to CBM-2. At the same time, the output of Q1 switches the SSG in the camera head to accept the external sync signal.
The H sync phase externally controls and adjusts the time constant of mono-stable multi-vibrator IC3.
Depending on whether the RM-P200 is connected or not, a different adjusting VR is used. This switching is done by IC1-A.

SECTION 2
DISASSEMBLY

- See the section 2 of KY-17FIT.

SECTION 3
ELECTRICAL ADJUSTMENT

- See the section 3 of KY-17FIT.

7.1 VP board assembly 15

15□□□□□□

Symbol No.	Part No.	Part Name	Description
IC1	TC4053BP	IC	TOSHIBA
IC2	SN75158P	IC	TEXAS
IC3	SN75157P	IC	TEXAS
IC4	TA78L005AP	IC	TOSHIBA
IC5	NJM4556D	IC	JRC
Q1	2SA564(R)	Transistor	MATSUSHITA
Q2	2SA564(R)	Transistor	MATSUSHITA
Q3	2SA564(R)	Transistor	MATSUSHITA
Q4	2SB793(Q.R)	Transistor	MATSUSHITA
D1	HZ9C1L	Zener Diode	HITACHI
D2	MA165TA	Diode	MATSUSHITA
D3	HZ4ALL	Zener Diode	HITACHI
R1	QRD161J-472	CR	4.7 K 1/6 W
R2	QVPB614-501	VR	500 G/Y LEVEL
R3	QRD161J-750	CR	75 1/6 W
R4	QRD161J-472	CR	4.7 K 1/6 W
R5	QVPB614-501	VR	500 R/R-Y/CHROMA LEVEL
R6	QRD161J-750	CR	75 1/6 W
R7	QRD161J-472	CR	4.7 K 1/6 W
R8	QVPB614-501	VR	500 B/B−Y LEVEL
R9	QRD161J-750	CR	75 1/6 W
R10	QRD161J-472	CR	4.7 K 1/6 W
R11	QRD161J-151	CR	150 1/6 W
R12	QRD161J-104	CR	100 K 1/6 W
R13	QRD161J-222	CR	2.2 K 1/6 W
R14	QRD161J-103	CR	10 K 1/6 W
R15	QRD161J-104	CR	100 K 1/6 W
R16	QRD161J-103	CR	10 K 1/6 W
R17	QRD161J-103	CR	10 K 1/6 W
R18	QRD161J-680	CR	68 1/6 W
R19	QRD161J-153	CR	15 K 1/6 W
R20	QRD161J-223	CR	22 K 1/6 W
R21	QRD161J-332	CR	3.3 K 1/6 W
R22	QRD161J-221	CR	220 1/6 W
R23	QRD161J-221	CR	220 1/6 W
R24	QVPB614-102	VR	1 K B-Y LEVEL
R25	QRD161J-152	CR	1.5 K 1/6 W
R26	QVPB614-102	VR	1 K R-Y LEVEL
R27	QRD161J-152	CR	1.5 K 1/6 W
R28	QRD161J-472	CR	4.7 K 1/6 W
C1	QEPA0JM-476	E Cap	47 6.3 V
C2	QETA1AM-227	E Cap	220 10 V
C3	QER41HM-105	E Cap	1 50 V
C4	QETA1AM-227	E Cap	220 10 V
C5	QETA1AM-227	E Cap	220 10 V
C6	QER41HM-105	E Cap	1 50 V
C7	QETA1AM-227	E Cap	220 10 V
C8	QETA1AM-227	E Cap	220 10 V
C9	QER41HM-105	E Cap	1 50 V
C10	QETA1AM-227	E Cap	220 10 V
C11	QER41AM-476	E Cap	47 10 V
C12	QER41AM-476	E Cap	47 10 V
C13	QER41AM-476	E Cap	47 10 V
C14	QER41AM-476	E Cap	47 10 V
C15	QER41HM-105	E Cap	1 50 V
C16	QER41EM-106	E Cap	10 25 V
C17	QER41EM-106	E Cap	10 25 V
C18	QER41EM-106	E Cap	10 25 V
C19	QER41AM-476	E Cap	10 25 V
C20	QER41HM-105	E Cap	1 50 V
C21	QER41EM-106	E Cap	10 25 V
C22	QER41AM-476	E Cap	47 10 V
C23	QER41EM-106	E Cap	10 25 V
C24	QER40JM-476	E Cap	47 6.3 V
C25	QER40JM-476	E Cap	47 6.3 V
C26	QER40JM-476	E Cap	47 6.3 V
C27	QER41EM-106	E Cap	10 25 V
S1	SCV1335-004	Dip Switch	Y/C, REG, AUTO COMPO
CN34	SCV0501-001	Connector	30 Pin
●CBM1	**CBMC4297-00A**	**VIDEO SW CBM**	
IC1	TC4053BF	IC	TOSHIBA
Q1	2SC2295(B.C)	Transistor	MATSUSHITA
Q2	2SC2295(B.C)	Transistor	MATSUSHITA
Q3	2SC2295(B.C)	Transistor	MATSUSHITA
Q4	2SC2295(B.C)	Transistor	MATSUSHITA
Q5	2SC2295(B.C)	Transistor	MATSUSHITA
Q6	2SC2295(B.C)	Transistor	MATSUSHITA
D1	MA152WA	Diode	MATSUSHITA
R1	NRSA02J-153	CR	1.5 K 1/10 W
R2	NRSA02J-123	CR	12 K 1/10 W
R3	NRSA02J-101	CR	100 1/10 W
R4	NRSA02J-222	CR	2.2 K 1/10 W
R5	NRSA02J-102	Chip R	1 K 1/10 W
R6	NRSA02J-101	Chip R	100 1/10 W
R7	NRSA02J-101	Chip R	100 1/10 W
R8	NRSA02J-222	Chip R	2.2 K 1/10 W
R9	NRSA02J-102	Chip R	1 K 1/10 W
R10	NRSA02J-101	Chip R	100 1/10 W
R11	NRSA02J-101	Chip R	100 1/10 W
R12	NRSA02J-222	Chip R	2.2 K 1/10 W
R13	NRSA02J-102	Chip R	1 K 1/10 W
R14	NRSA02J-105	Chip R	1 M 1/10 W
R15	NRSA02J-102	CR	1 K 1/10 W
R16	NRSA02J-102	CR	1 K 1/10 W
R17	NRSA02J-102	CR	1 K 1/10 W
C1	NCT03CH-470	C Cap	47 P 50 V
C2	NCT03CH-680	C Cap	68 P 50 V
C3	NCT03CH-470	C Cap	47 P 50 V

Symbol No.	Part No.	Part Name	Description
●CBM2	**CBMC4213-00A**	**VIDEO OUT CBM**	
●CBM3	**CBMC4213-00A**	**VIDEO OUT CBM**	
●CBM4	**CBMC4213-00A**	**VIDEO OUT CBM**	
Q1	2SC2295(B.C)	Transistor	MATSUSHITA
Q2	2SC2295(B.C)	Transistor	MATSUSHITA
Q3	2SD602(Q.R)	Transistor	MATSUSHITA
Q4	2SD602(Q.R)	Transistor	MATSUSHITA
D1	HZM6CTR	Zener Diode	HITACHI
R1	NRSA02J-222	Chip R	2.2 K 1/10 W
R2	NRSA02J-152	Chip R	1.5 K 1/10 W
R3	NRSA02J-123	Chip R	12 K 1/10 W
R4	NRSA02J-472	Chip R	4.7 K 1/10 W
R5	NRSA02J-153	Chip R	15 K 1/10 W
R6	NRSA02J-392	Chip R	3.9 K 1/10 W
R7	NRSA02J-392	Chip R	3.9 K 1/10 W
R8	NRSA02J-560	Chip R	56 1/10 W
R9	NRSA02J-560	Chip R	56 1/10 W
R10	NRSA02J-271	Chip R	270 1/10 W
C1	NCF21EZ-104	C Cap	0.1 25 V
●CBM5	**CBMC4269-00A**	**RM CTL CBM**	
IC1	TC4S66F	IC	TOSHIBA
Q1	2SC2295(B.C)	Transistor	MATSUSHITA
Q2	DTC124K	Transistor	〃
Q3	2SC2295(B.C)	Transistor	MATSUSHITA
Q4	2SC2295(B. C)	Transistor	MATSUSHITA
Q5	2SC2295(B.C)	Transistor	MATSUSHITA
D1	MA152A	Diode	MATSUSHITA
D2	MA152A	Diode	MATSUSHITA
R1	NRSA02J-393	Chip R	39 K 1/10 W
R2	–	–	
R3	–	–	
R4	NRSA02J-123	Chip R	12 K 1/10 W
R5	NRSA02J-103	Chip R	10 K 1/10 W
R6	NRSA02J-103	Chip R	10 K 1/10 W
R7	NRSA02J-104	Chip R	100 K 1/10 W
R8	NRSA02J-104	Chip R	100 K 1/10 W
R9	–	–	
R10	–	–	
R11	NRSA02J-332	Chip R	3.3 K 1/10 W
R12	NRSA02J-332	Chip R	3.3 K 1/10 W
R13	NRSA02J-104	Chip R	100 K 1/10 W

Symbol No.	Part No.	Part Name	Description
R14	NRSA02J-104	Chip R	100 K 1/10 W
R15	NRSA02J-104	Chip R	100 K 1/10 W
R16	NRSA02J-104	Chip R	100 K 1/10 W
C1	NCF21EZ-104	C Cap	0.1 25 V
●CBM6	**CBMC4298-00A**	**SAVE CTL CBM**	
IC	TC4053BF	IC	TOSHIBA
Q1	–	–	
Q2	–	–	
Q3	–	–	
Q4	DTC124K	Transistor	ROHM
Q5	DTA124K	Transistor	ROHM
Q6	DTC124K	Transistor	ROHM
R1	–	–	
R2	–	–	
R3	–	–	
R4	–	–	
R5	NRSA02J-222	Chip R	2.2 K 1/10 W
R6	NRSA02J-223	Chip R	22 K 1/10 W
R7	NRSA02J-104	Chip R	100 K 1/10 W
R8	NRSA02J-104	Chip R	100 K 1/10 W
●CBM8	**CBMC4304-00A**	**VIDEO AMP/DET CBM**	
Q1	2SA1022(B.C)	Transistor	MATSUSHITA
Q2	2SC2295(B.C)	Transistor	MATSUSHITA
Q3	2SC2406(B.C)	Transistor	MATSUSHITA
Q4	DTC124K	Transistor	ROHM
D1	MA152A	Diode	MATSUSHITA
R1	NRSA02J-393	CR	39 K 1/10 W
R2	NRSA02J-123	CR	12 K 1/10 W
R3	NRSA02J-822	CR	8.2 K 1/10 W
R4	NRSA02J-822	CR	8.2 K 1/10 W
R5	NRSA02J-104	CR	100 K 1/10 W
R6	NRSA02J-562	CR	5.6 K 1/10 W
R7	NRSA02J-122	CR	1.2 K 1/10 W

Symbol No.	Part No.	Part Name	Description
●CBM9	**CBMC4311-00A**	**SID GENE CBM**	
IC1	TC40H166F	IC	TOSHIBA
IC2	TC4020BF	IC	TOSHIBA
IC3	TC40H000F	IC	TOSHIBA
Q1	2SC2295(B.C)	Transistor	MATSUSHITA
Q2	DTC124K	Transistor	ROHM
Q3	DTC124K	Transistor	ROHM
Q4	DTC124K	Transistor	ROHM
D1	MA152A	Diode	MATSUSHITA
R1	NRSA02J-224	Chip R	220 K 1/10 W
R2	NRSA02J-104	Chip R	100 K 1/10 W
R3	NRSA02J-103	Chip R	10 K 1/10 W
R4	NRSA02J-223	Chip R	22 K 1/10 W
R5	NRSA02J-223	Chip R	22 K 1/10 W
R6	NRSA02J-223	Chip R	22 K 1/10 W
R7	NRSA02J-223	Chip R	22 K 1/10 W
R8	NRSA02J-332	Chip R	3.3 K 1/10 W
R9	NRSA02J-103	Chip R	10 K 1/10 W
C1	NCF21EZ-104	C Cap	0.1 25 V
C2	NCF21HJ-102	C Cap	0.001 50 V

7.2 GL board assembly 16

Symbol No.	Part No.	Part Name	Description
IC1	TC4053BP	IC	TOSHIBA
IC2	TC4528BP	IC	TOSHIBA
IC3	TC4528BP	IC	TOSHIBA
IC4	TC4528BP	IC	TOSHIBA
IC5	HD14046BP	IC	HITACHI
IC7	HA11247	IC	HITACHI
Q1	2SA564(R)	Transistor	MATSUSHITA
Q2	2SC1685(R.S)	Transistor	MATSUSHITA
Q3	2SA777(R)	Transistor	MATSUSHITA
Q4	2SA564(R)	Transistor	MATSUSHITA
Q5	2SA564(R)	Transistor	MATSUSHITA
Q6	2SC1685(R.S)	Transistor	MATSUSHITA
Q7	2SA719R	Transistor	MATSUSHITA
Q8	DTC124ES	Transistor	ROHM
D1	MA165	Diode	MATSUSHITA
D2	HZ4ALL	Zener Diode	HITACHI
D3	MA165	Diode	MATSUSHITA
D4	MA165	Diode	MATSUSHITA
D5	MA165	Diode	MATSUSHITA
D6	HZ6(2C)L	Zener Diode	HITACHI
D7	MA165	Diode	MATSUSHITA
R1	QRD161J-472	CR	4.7 K 1/6 W
R2	QRD161J-223	CR	22 K 1/6 W
R3	QRD161J-223	CR	22 K 1/6 W
R4	QRD161J-103	CR	10 K 1/6 W
R5	QRD161J-333	CR	33 K 1/6 W
R6	QRD161J-822	CR	8.2 K 1/6 W
R7	QRD161J-222	CR	2.2 K 1/6 W
R8	QRD161J-562	CR	5.6 K 1/6 W
R9	QRD161J-681	CR	680 1/6 W
R10	QRD161J-182	CR	1.8 K 1/6 W
R11	QRD161J-153	CR	15 K 1/6 W
R12	QRD161J-563	CR	56 K 1/6 W
R13	QRD161J-273	CR	27 K 1/6 W
R14	QRD161J-103	CR	10 K 1/6 W
R15	QRD161J-681	CR	680 1/6 W
R16	QRV141F-2201	MFR	2.2 K 1/4 W
R17	QRD161J-103	CR	10 K 1/6 W
R18	QRD161J-102	CR	1 K 1/6 W
R19	QRD161J-105	CR	1 M 1/6 W
R20	QRD161J-332	CR	3.3 K 1/6 W
R21	QRD161J-332	CR	3.3 K 1/6 W
R22	QRD161J-563	CR	56 K 1/6 W
R23	QRD161J-273	CR	27 K 1/6 W
R24	QVPB614-503	VR	50 K BURST TIMING
R25	QRV141F-6802	MFR	68 K 1/4 W
R26	QRV141F-8202	MFR	82 K 1/4 W
R27	QRV141F-6802	MFR	68 K 1/4 W
R28	QRD161J-472	CR	4.7 K 1/6 W
R29	QVPB614-501	VR	500 Ω LOCK
R30	QRD161J-562	CR	5.6 K 1/6 W
R31	QRD161J-821	CR	820 1/6 W
R32	QRD161J-391	CR	390 1/6 W
R33	QRD161J-152	CR	1.5 K 1/6 W

Symbol No.	Part No.	Part Name	Description
R34	QRD161J-271	CR	270 1/6 W
R35	QRD161J-472	CR	4.7 K 1/6 W
R36	QRD161J-472	CR	4.7 K 1/6 W
R37	QRD161J-123	CR	12 K 1/6 W
R38	QRD161J-103	CR	10 K 1/6 W
R39	QRD161J-221	CR	220 1/6 W (U ver.)
	QRD161J-102	CR	1 K 1/6 W (E ver.)
R40	QRD161J-563	CR	56 K 1/6 W
R41	QRD161J-103	CR	10 K 1/6 W
R42	QRD161J-103	CR	10 K 1/6 W
R43	QRD161J-103	CR	10 K 1/6 W
R44	QRD161J-100	CR	10 1/6 W
R45	QRD161J-221	CR	220 1/6 W
R46	QRD161J-103	CR	10 K 1/6 W
R47	QRD161J-103	CR	10 K 1/6 W
R48	QRD161J-334	CR	330 K 1/6 W
R49	QRD161J-100	CR	10 1/6 W
C1	QER41EM-106	E Cap	10 25 V
C2	QER41AM-476	E Cap	47 6.3 V
C3	QEPA1HM-105	E Cap	1 50 V
C4	QERA1AM-476	E Cap	47 6.3 V
C5	QFN31HJ-103	C Cap	0.01 50 V
C6	QCT25UJ-220	C Cap	22 P
C7	QFN41HJ-103	MY Cap	0.01 50 V
C8	QCT25UJ-151	C Cap	150 P
C9	QFN41HJ-103	MY Cap	0.01 50 V
C10	QER41AM-476	E Cap	47 10 V
C11	QETA1AM-227	E Cap	220 10 V
C12	QETA1AM-227	E Cap	220 10 V
C13	QFN41HJ-102	MY Cap	0.001 50 V
C14	QEP41CM-106	E Cap	10 16 V
C15	QEPA0JM-476	E Cap	47 6.3 V
C16	QER41AM-476	E Cap	47 10 V
C17	QCT25CH-181	C Cap	180 P
C18	QCT25CH-470	C Cap	47
C19	QCT25CH-220	C Cap	22 P
C20	QCT25CH-560	C Cap	56 P
C21	QEJ41AM-475	E Cap	4.7 10 V
C22	QFN41HJ-333	MY Cap	0.033 50 V
C23	QCT25CH-101	C Cap	100 P (E ver. only)
C24	QEJ41AM-106	E Cap	10 10 V
C25	QER41EM-106	E Cap	10 50 V
C26	QEJ41AM-106	E Cap	10 10 V
C27	QEJ41AM-106	E Cap	10 10 V
C28	QFN41HJ-333	MY Cap	0.033 50 V (U ver.)
	QEJ41VM-224	T Cap	0.22 35 V (E ver.)
C29	QFN41HJ-103	MY Cap	0.01 50 V
C30	QCT25UJ-101	C Cap	100 P
C31	QCT25UJ-101	C Cap	100 P
C32	QER41HM-105	E Cap	1 50 V
C33	QCT25UJ-101	C Cap	100 P
C34	QEPA1HM-105	E Cap	1 50 V
C35	QER41EM-106	E Cap	10 25 V
C36	QEPA1CM-106	E Cap	10 16 V
C37	QEJ41AM-106	E Cap	10 10 V
C38	QER41AM-476	E Cap	47 10 V
C39	QEPA1CM-106	E Cap	10 16 V
C40	QER40JM-107	E Cap	100 6.3 V
C41	QEPA0JM-476	E Cap	47 6.3 V

Symbol No.	Part No.	Part Name	Description
C42	QER41EM-106	E Cap	10 25 V
C43	QFN41HJ-222	MY Cap	2200 P 50 V
L1	SCV0331-390	Paeking Coil	39 μH
L2	SCV0331-220	Paeking Coil	22 μH
L3	SCV0331-120	Paeking Coil	12 μH
L4	SCV0331-220	Paeking Coil	22 μH
T1	SCV0514-001	Trans	MIC Trans
CN35	SCV0501-001	Connector	30 Pin
●CBM1	**CBMC4211-00A**	**SYNC SEP CBM**	
Q1	2SC1022(B.C)	Transistor	MATSUSHITA
Q2	2SC1022(B.C)	Transistor	MATSUSHITA
Q3	2SC2295(B.C)	Transistor	MATSUSHITA
Q4	2SC2295(B.C)	Transistor	MATSUSHITA
Q5	2SC2295(B.C)	Transistor	MATSUSHITA
Q6	2SC2295(B.C)	Transistor	MATSUSHITA
Q7	2SC1022(B.C)	Transistor	MATSUSHITA
R1	NRSA02J-103	Chip R	10 K 1/10 W
R2	NRSA02J-393	Chip R	39 K 1/10 W
R3	NRSA02J-102	Chip R	1 K 1/10 W
R4	NRSA02J-271	Chip R	270 1/10 W
R5	NRSA02J-560	Chip R	56 1/10 W
R6	NRSA02J-561	Chip R	56 1/10 W
R7	NRSA02J-332	Chip R	3.3 K 1/10 W
R8	NRSA02J-102	Chip R	1 K 1/10 W
R9	NRSA02J-563	Chip R	56 K 1/10 W
R10	NRSA02J-273	Chip R	27 K 1/10 W
R11	NRSA02J-152	Chip R	1.5 K 1/10 W
R12	NRSA02J-100	Chip R	10 1/10 W
R13	NRSA02J-562	Chip R	5.6 K 1/10 W
R14	NRSA02J-682	Chip R	6.8 K 1/10 W
R15	NRSA02J-392	Chip R	3.9 K 1/10 W
R16	NRSA02J-392	Chip R	3.9 K 1/10 W
R17	NRSA02J-472	Chip R	4.7 K 1/10 W
R18	NRSA02J-562	Chip R	5.6 K 1/10 W
R19	NRSA02J-332	Chip R	3.3 K 1/10 W
R20	NRSA02J-332	Chip R	3.3 K 1/10 W
C3	NCT03CH-150	C Cap	15 P 50 V
C5	NCB21HK-272	C Cap	0.0027 50 V
C6	NCT03CH-561	C Cap	560 P 50 V
C7	NCF21EZ-104	C Cap	0.1 25 V
●CBM2	**CBMB4212-00A**	**ERROR AMP CBM**	
IC1	NJM4558M	IC	JRC
IC2	NJM4558M	IC	JRC

Symbol No.	Part No.	Part Name	Description
D1	MA152A	Diode	MATSUSHITA
R1	NRSA02J-332	Chip R	3.3 K 1/10 W
R2	NRSA02J-682	Chip R	6.8 K 1/10 W
R3	NRSA02J-562	Chip R	5.6 K 1/10 W
R4	NRSA02J-224	Chip R	220 K 1/10 W
R5	NRSA02J-223	Chip R	22 K 1/10 W
R6	NRSA02J-104	Chip R	100 K 1/10 W
R7	NRSA02J-473	Chip R	47 K 1/10 W
R8	NRSA02J-473	Chip R	47 K 1/10 W
R9	NRSA02J-561	Chip R	560 1/10 W
R10	NRSA02J-273	Chip R	27 K 1/10 W
R11	NRSA02J-273	Chip R	27 K 1/10 W
R12	NRSA02J-333	Chip R	33 K 1/10 W
R13	NRSA02J-102	Chip R	1 K 1/10 W
C1	NCF21EZ-104	C Cap	0.1 25 V
●CBM3	**CBMC4305-00A**	**MIC AMP CBM**	
IC1	NJM4558M	IC	JRC
IC2	NJM4558M	IC	JRC
R1	NRSA02J-104	Chip R	100 K 1/10 W
R2	NRSA02J-104	Chip R	100 K 1/10 W
R3	NRSA02J-104	Chip R	100 K 1/10 W
R4	NRSA02J-104	Chip R	100 K 1/10 W
R5	NRSA02J-104	Chip R	100 K 1/10 W
R6	NRSA02J-104	Chip R	100 K 1/10 W
R7	NRSA02J-333	Chip R	33 K 1/10 W
R8	NRSA02J-104	Chip R	100 K 1/10 W
C1	NCT03CH-560	C Cap	56 P 50 V
C2	NCT03CH-560	C Cap	56 P 50 V

7.3 CT board assembly 17

17□□□□□□

Symbol No.	Part No.	Part Name	Description
R1	QVPB613-203	VR	20 K H PHNSE
R2	QRD161J-472	CR	4.7 K 1/6 W
R3	QVD161J-472	CR	4.7 K 1/6 W
R4	QVD161J-820	CR	820 1/6 W
R5	QVPB613-202	VR	2 K SC FINE
R6	QRD161J-104	CR	100 K 1/6 W
R7	QRD161J-104	CR	100 K 1/6 W
R8	QRD161J-154	CR	150 K 1/6 W
S1	SCV0389-011	Slide Switch	SC COARSE
S2	SCV0389-011	Slide Switch	VTR
S3	SCV1346-011	Slide Switch	MODE
S4	SCV0490-011	Slide Switch	AUDIO LEVEL
CN44	SCV1266-020	Connector	20 Pin
●CBM5	**CBMC4214-00A**	**SC PHASE CBM**	
Q1	2SC2406(S. T)	Transistor	MATSUSHITA
Q2	2SC2406(S. T)	Transistor	MATSUSHITA
Q3	2SC2406(S. T)	Transistor	MATSUSHITA
Q4	2SA1022(B.C)	Transistor	MATSUSHITA
R1	NRSA02J-102	Chip R	1 K 1/10 W
R2	NRSA02J-102	Chip R	1 K 1/10 W
R3	NRSA02J-561	Chip R	560 1/10 W
R4	NRSA02J-821	Chip R	820 1/10 W
R5	NRSA02J-821	Chip R	820 1/10 W
R6	NRSA02J-561	Chip R	560 1/10 W
R7	NRSA02J-681	Chip R	680 1/10 W
R8	NRSA02J-681	Chip R	680 1/10 W
R9	NRSA02J-562	Chip R	5.6 K 1/10 W
C1	NCT03CH-101	C Cap	100 P 50 V
C2	NCT03CH-101	C Cap	100 P 50 V
C3	NCT03CH-560	C Cap	56 P 50 V
C4	NCF21HZ-103	C Cap	0.01 50 V
C5	NCF21HZ-103	C Cap	0.01 50 V

7.4 MT2 board assembly 18

18☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
R1	QRD161J-750	CR	75 1/6 W
R2	QRD161J-750	CR	75 1/6 W
C1	QEPA1CM-106	E Cap	10 16 V
C2	NCT03CH-101	CR	100 P
C3	QETC1CM-108	E Cap	1000 16 V
CN34	SCV0500-001	Connector	30 Pin VP board
CN35	SCV0500-001	Connector	30 Pin GL board
CN36	SCV1251-40S	Connector	40 Pin
CN38	SCV1265-028	Connector	28 Pin
CN39	SCV1227-003	Connector	3 Pin VR board
CN40	SCV1227-004	Connector	4 Pin INT board
CN41	SCV1228-002	Connector	2 Pin ER board
CN42	SCV1228-002	Connector	2 Pin
CN43	SCV1227-003	Connector	3 Pin CN 2 board
CN44	SCV1265-020	Connector	20 Pin CT board
CN45	SCV1227-005	Connector	5 Pin CN 4 board
⚠ F1	Perfer to Section 2.1		
	SCV1271-001	Fuse Holder	
LC1	DST306-92B271M	Filter	
S1	SCV1080-003	Socket	PB AUDIO/AUDIO 2
	SCV1392-001	Short Pin	

7.5 INT board assembly 19

19☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
R2	QRD161J-102	CR	1 K 1/6 W
J8	Refer Section 5.2.1 ⑭		INCOM JACK

JVC

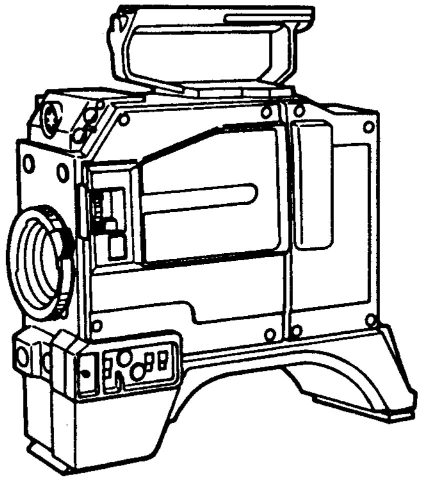
SERVICE MANUAL

3-CCD COLOR VIDEO CAMERA

Supplement

KY-17FIT

【with KA-20】



NOTE:

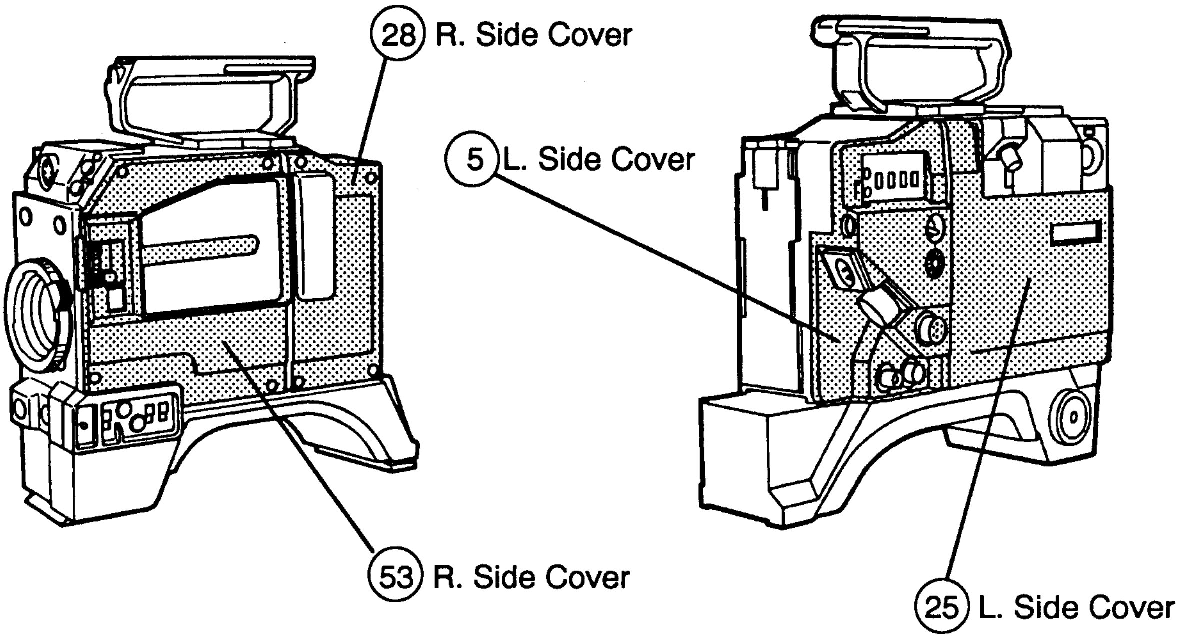
•*Manual Change Information for Service manual No.60056.*
*Paint color of **SIDE COVERs** was changed from light gray to dark gray type.*

Affected SERIAL No.
KY-17FITU .... 12750233 and after
KY-17FITE .... 11750465 and after
KA-20U .... 12750856 and after
KA-20E .... 11750811 and after

No. 60056 – 1
June 1992

SECTION 5

5.2 EXPLODED VIEW AND PARTS LIST


28 R. Side Cover
5 L. Side Cover
53 R. Side Cover
25 L. Side Cover

•*KY-17FIT CAMERA HEAD*

Symbol No.	Part No.		Part Name
	Original	New	
25	SC20314-041	SC20314-061	L. Side Cover
53	SC20399-011	SC20399-031	R. Side Cover

•*KA-20 CAMERA ADAPTER*

Symbol No.	Part No.		Part Name
	Original	New	
5	SC10076-003	SC10076-011	L. Side Cover(U Ver.)
	SC10076-004	SC10076-021	L. Side Cover(E Ver.)
28	SC20339-002	SC20339-011	R. Side Cover